COPING MECHANISMS OF FOOD INSECURE HOUSEHOLDS IN URBAN ETHIOPIA

by

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This study is dedicated to food insecure urban households in Ethiopia and to those striving to help them.

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DECLARATION

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I declare that the above thesis is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.

SIGNATURE

27 January, 2019

DATE

ABBREVIATIONS/ACRONYMS

AFSUN	African Food Security Urban Network
AIDS	Acquired Immuno Deficiency Syndrome
AU	African Union
CEMFS	Combined Experiential Measure of Food Security
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CSA	Central Statistical Agency
CSI	Coping Strategies Index
CSPro	Census and Survey Processing System
CV	Coefficient Variation
DFID	Department for International Development
DV	Dependent Variable
ETB	Ethiopian Birr
EU	European Commission
FAO	Food and Agriculture Organisation
FAOSTAT	FAO Statistical Databases
FCS	Food Consumption Score
FGD	Focus Group Discussions
FSP	Food Security Programme
GHI	Global Hunger Index
HABP	Household Asset Building Programme
HCES	Household Consumption and Expenditure Survey
HDDS	Household Dietary Diversity Scale
HFIAP	Household Food Insecurity Access Prevalence
HFIAS	Household Food Insecurity and Access Scale
HHS	Household Hunger Scale
HIV	Human Immunodeficiency Virus
HNLSS	Harmonized Nigeria Living Standard Survey
ICESCR	International Covenant on Economic, Social, and Cultural Rights
IFAD	International Fund for Agricultural Development
ILO	International Labour Organisation
IV	Independent Variable
MDG	Millennium Development Goal
MoLSA	Ministry of Labour and Social Affairs
MoUDHC	Ministry of Urban Development, Housing, and Construction
MSE	Micro and Small Enterprise
MUAC	mid-upper arm circumference
NGO	Non-Governmental Organisations
NNP	National Nutrition Programme
PCA	Principal Component Analysis
PSNP	Productive Safety Net Programme

rCSI	Reduced Coping Strategies Index
SADC	Southern African Development Community
SAMFS	Self-Assessed Measure of Food Security
SCI	Coping Strategy Index
SDG	Sustainable Development Goal
SIP	Social Insurance Programme
SL	Sustainable Livelihoods
SNNPR	Southern Nations, Nationalities and Peoples Region
SPSS	Statistical Package for Social Scientists
SSA	Sub-Saharan Africa
TV	Television
UDHR	Universal Declaration of Human Rights
UK	United Kingdom
UN	United Nations
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UPSNP	Urban Productive Safety Net Programme
US	United States
USAID	United States Agency for International Development
VIF	Variance Inflation Factor
WFP	World Food Program
WHO	World Health Organisation
WMS	Welfare Monitoring Survey

ABSTRACT

With an increasing rate of urbanisation in East Africa, and with the highest prevalence rate of undernourished population than any region in the developing world, the issue of food access insecurity in urban areas has received considerable attention. While there are noticeable differences between big, medium- and small-sized towns, the variation in the household's response to food access insecurity across urban hierarchies remains largely unexplored. This study aimed to investigate the social, economic and demographic factors in coping with food access insecurity among households in urban slum areas of Ethiopia.

The study used both secondary and primary data sources. The national surveys of household consumption and expenditure survey and welfare monitoring surveys of 2004/5, 2010/11, and 2015/16 was used to analyse the food security situation in Ethiopia across time and urban hierarchies. Primary data of 500 households and three focus group discussions were conducted from slum areas of Addis Ababa, Hawassa, and Sheki representing a big city, medium- and small-sized town, respectively. The household survey data were subjected to descriptive statistical analysis and a standard regression model to investigate the relationship between factors such as household structure and composition, economic resources, social protection programmes and projects, and urban-rural linkages with coping with food access insecurity across urban hierarchies. A global model and three site-specific regression models were constructed.

Descriptive results from both the primary and the secondary data sources have revealed that the proportion of the households affected by food shortage varies across the urban hierarchy that food insecurity was highest in the small-sized town as compared with the medium-sized town and the big city. The quality of food consumed was consistently low among female-headed households regardless of their socio-economic characteristics when compared with male-headed households. The result of the regression analysis for the global model has shown that economic resources (asset and source of income) predict nearly half of the variability in coping with food access insecurity. Household structure and composition such as gender and education of the head of the household, family structure (nuclear/extended), and the ratio of young children in the household predict a quarter of the variability in coping. Social protection programs and services predict one-tenth; the remaining variability in coping is explained by the combined effect of all the factors involved.

The significance of these factors in predicting coping with food access insecurity, however, varies across the urban hierarchies. The contribution of economic factors in predicting coping is the highest at the big city (Addis Ababa); household structure and composition took the leading role in predicting coping at the small-sized town (Sheki); the significant factors in predicting coping at the medium-sized town (Hawassa) was the combined effect of all the factors involved. Household characteristics such as female headship, a higher ratio of young children, low education of the household head, lack of access to the financial loan, asset and income poverty, and weak linkages with kin structure at rural areas increase vulnerability to food insecurity and put households under stress to cope with food access insecurity.

The study results show that the traditional urban-rural dichotomy may not suffice to portray the degree of food insecurity, as well as the mechanisms how food insecure households strive to cope with food access insecurity, which varies across the continuum of urban hierarchies. Those who wish to support food insecurity challenges need to be sensitive to the variability of factors in coping with food access insecurity across urban hierarchies. During policy, design and program implementation policymakers and international partners need to consider that the needs and coping mechanisms of urban households vary across urban hierarchies besides the other social, economic and demographic variables.

Keywords: *food insecurity, coping, productive safety net, urbanisation, urban hierarchy, urban-rural linkage, household composition, social protection, economic resource, calorie intake, food consumption*

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

This introductory chapter outlines the background of the study and statement of the problem, objectives of the research, and the research questions. The chapter also describes the significance of the study and provides definitions of key terms used. Finally, it includes an outline of the remaining chapters of the thesis.

1.1 Background of the Study

Since the establishment of the Food and Agriculture Organisation (FAO) in October 1945, food security has continued to be the world's development priority and central humanitarian agenda. The emphasis on addressing food security advanced when heads of state and their representatives were gathered at the World Food Summit in 1996. The World Food Summit held at FAO Headquarters in Rome, from 13 to 17 November 1996, provides a comprehensive definition that "*food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life"* (World Food Summit, 1996). The food security definition encompasses four dimensions - availability, access, utilisation, and stability - providing useful tools for food security analysis (Pieters et al. 2013; WFP 2009).

According to FAO report (FAO et al. 2019:6), the prevalence of undernourishment decreased steadily between 2005 and 2015, and it remained around 11 per cent during the past three years (10.7% in 2016, 10.8% in 2017, and 10.8% in 2018). As revealed in FAO et al. (2019:22) *"the absolute number of people suffering from hunger, however, continues to increase that there are more than 821.6 million hungry people in the world*", 36.2 million

higher than the 785.4 million at the closing of the MDGs in 2015. Regionally, undernourishment is the highest in SSA at a prevalence rate of 22.8 per cent followed by the Caribbean 18.4 per cent, and Southern Asia 14.7 per cent, (FAO et al. 2019:8).

In addition to FAO member countries, other multilateral organisations were also established and enacted policies, institutionalised systems, and designed programs and projects to deal with food security. The UN research guides on food security and nutrition (UN 2019) provides a list of funds, programmes and specialised agencies addressing food issues that include World Food Programme (WFP), International Fund for Agricultural Development (IFAD), The World Bank, and the United Nations Environment Programme (UNEP). The World Food Programme (WFP) was founded in 1963 as a lead UN agency focusing on emergency assistance to respond to food emergencies and to improve nutrition and build resilience (WFP 2019). Founded in 1977, the International Fund for Agricultural Development (IFAD) focuses on *"rural poverty reduction, working with poor rural populations in developing countries to eliminate poverty, hunger, and malnutrition*" (IFAD 2019). The World Bank, founded in 1944, is actively involved in funding food projects and programmes in the developing world (World Bank, 2019). The United Nations Environment Programme (UNEP) was established in 1972 as the international arm providing guidance and assistance to developing countries through execution of rigorous environmental policies and practices (UNEP 2019). Currently, FAO and UNEP are jointly involved in addressing food security issues (FAO & UNEP 2014).

The focus of FAO and these organisations are concentrated more to address the availability component of food security through policies, programs, and projects focusing on creating a balance between food production and population growth (Stringer 2016). Empirical evidence demonstrates that the effort to address the agenda of food availability has been a success.

Own analysis of the free access FAOSTAT data (FAO 2017), in this regard, shows a continuous increase in world food production. For example, looking into the growth in total cereal production after 1990, the total production has shown a continuous upward increase at all levels: 46 per cent globally, 141 per cent in the least developed countries, 56 per cent in Asia, 94 per cent in Africa, and 140 per cent in East Africa.

According to FAOSTAT data, the increase in total cereal production in Ethiopia was very high in that it increased from 8 million tons in 1990 to 25.3 million tons in 2016, which is an increase by 314 per cent during the period. On the other hand, during this same period, the population of the world, Africa, and East Africa region has increased by 23 per cent, 54 per cent, and 62 per cent respectively. Similarly, the Ethiopian population has increased from 66 million to 101 million, an increase of 54 per cent, with an urbanisation rate of 20 per cent. The population growth rate in Ethiopia during the period was 44 per cent in rural and 108 per cent in urban areas, indicating a high rate of urbanisation in the country (own calculation based on 2017 estimated population size from FAO database).

Despite the situation that agricultural productivity dominates the international food security discourse, scholars and development organisations (Burchi & De Muro 2016; FAO 2013; FAO 1996) argued that an adequate supply of food at the national or international level is not sufficient to guarantee household-level food security. Sen (1981) initiated the access component of food security, extending the availability dimension.

East Africa is the region that has high rate of urbanisation, low and irregular earnings, skyrocketing food price (Cohen & Garrett 2010; Matuschke 2009; Tacoli 2013), and a slow pace in improving access to food towards achieving the SDG Zero Hunger targets in 2030 (FAO 2018). The region has the highest prevalence of undernourished population than any other region in the developing world (FAO et al. 2019; UN 2014). It can be, therefore, argued

that an investigation of factors to safeguard the urban poor's capability to cope with food access insecurity in the region could not be overemphasised. Generally, ensuring food security takes the central stage in the day-to-day life of humanity, as it is a lifeline, without which, the human body may fail to function or even survive.

The need to emphasise researching *"the complex relationship between household food security and a range of variables such as income, gender and household size*" (Crush 2013:6) and *"the most common coping mechanisms such as changing food intake in terms of quantity, quality, diversity and frequency, and prioritising children*" (Crush 2013:4) received considerable attention in Africa during the past decade. In SSA urbanisation is not necessarily related with higher economic growth (Hilderink et al. 2012; Laros & Jones 2014; Ravallion et al. 2007; Sonnino 2016) in which case urbanisation resulted in the growth of slums and informal settlements with a continued rise in urban poverty.

Residents in urban slum areas are mostly low-income migrants from rural areas and (or who) are predominantly unemployed or work in the less formal part of the economy. As a result, they are more susceptible to food insecurity. According to Habitat (2016), 55.9 per cent of the urban population in SSA lives in slum areas. The proportion of slum population is even higher in Ethiopia, where 73.9 per cent of the urban population (13.6 million) lives in slum areas (Habitat 2014). As a result, scholars (Crush & Frayne 2011) suggest achieving urban food security in urban areas of the developing world as an emerging development challenge of the 21st century and they emphasise researchers to address the complexities of urban food systems.

Regardless of the achieved economic progress Ethiopia has, it ranked 107th in 2016 from among 118 countries included in the Global Hunger Index (GHI) (VonGrebmer et al. 2016). Furthermore, the improvement made in calorie intake is not equitably distributed across all

social groups in urban and rural areas. According to the national consumption survey results (2004/5, 2010/11, and 2015/6) calorie intake has generally revealed an increasing trend for the country while it remained consistently lower in urban areas as compared to rural areas (CSA 2007; CSA 2012; CSA 2018).

It is against this backdrop that this study focuses on investigating the social, economic and demographic factors in coping with food access insecurity among food-insecure households in urban slum areas of Ethiopia. Specifically, the study of how coping with food access insecurity relates to the factors across the continuum of urban hierarchies. These are household structure and composition (such as the proportion of young children in the household, household structure, household size, and gender and education of the household head), access to social protection programs, urban-rural linkage, and economic resources (such as asset ownership and source of income).

This study uses theories to frame the demographic, economic, and socio-cultural contexts of food insecurity. Closely related theoretical approaches, such as Amartya Sen's theory of Entitlement (Sen 1981), Sen's Capabilities Approach (Sen 1993), Sustainable Development (SL) and the Double ABCX Model of Family Stress Adaptation were consulted. Specifically, integration of Amartya Sen's theory of Entitlement (Sen 1981), Sen's Capabilities Approach (Sen 1993), and Double ABCX Model of Family Stress Adaptation (McCubbin et al. 1983) were adopted to frame the analysis and interpretation of results. Amartya Sen's entitlement theories provide a framework for evaluating the responsiveness of a given system of social protection and employment opportunities in providing exchange entitlement adequate to avoid malnourishment. As it is described in Sen's theory, *"identifying a minimal combination of basic capabilities"* can be a good way of setting up the problem of diagnosing and measuring poverty (Sen 1993:41). These minimum capabilities may include the ability to be

food secure (achieving minimum calorie intake). The Double ABCX model describes variation in the ability of the family to recover from a crisis that gives rise to the difference why some families are better than others to cope with a crisis when confronted with life stressors and the factors they call upon and use in managing crises (McCubbin et al. 1983:89-90).

Several studies (Coleman-Jensen et al. 2013; Castañeda et al. 2018; Fernanda et al. 2016; Mohiddin et al. 2012; Quisumbing et al. 1996; Tabrizi et al. 2018) have shown the association of household factors in coping with food access insecurity. However, households in the continuum of the urban hierarchies may not cope with food access insecurity in the same way (Braun 1995; Miewald & Ostry 2014) due to difference in the structure of the household, access to economic resources and social protection system, and severity of the level of vulnerability to food insecurity. Hence, studying the difference demand a more subtle explanation to have its significance for urban food system-related policy and practice. The focus of this study is believed to contribute to the country's socio-economic development ultimately.

1.2 Statement of the Problem

Primarily, food security research in the developing world concentrates on rural areas (Berlie 2013; Crush & Frayne 2011; Kabui 2012; Oluoko-Odingo 2011). There is a tendency to view food insecurity, primarily a rural problem in developing countries such as Ethiopia (Abafita & Kim 2014; Motbainor 2016; Negash 2015; Regassa & Stoecker 2011). However, with an increasing rate of urbanisation in SSA, access to food is having a strong urban dimension (Matuschke 2009; Sonnino 2016). For instance, empirical data from the Household Consumption and Expenditure Survey (HCES) in Ethiopia (CSA 2007; CSA 2012; CSA 2018) show consistently lower gross calorie intake per adult equivalent in urban areas was

worse than the rural areas. Besides, the national survey data has also has shown that urban households in general and the urban poor (households in the lower expenditure quintile) in particular are disproportionately affected by food insecurity, and the situation continued to be worse over time.

The implementation of the urban productive safety net programs (UPSNP) considered the inclusion of major towns as a criterion for the selection of cities in the first phase of the programme. The nature of the livelihoods and the corresponding strategies that households strive to cope with food access insecurity along the continuum of the urban hierarchies demand a more subtle explanation, the reason being that households in all urban spaces may not cope with food access insecurity in the same way (FAO 2011; Braun 1995; Guo 2011; Miewald & Ostry 2014). The multifaceted nature of urban poverty and the subsequent household food insecurity across factors such as household structure, economic resources, social protection programs, and urban-rural linkage merits deeper understanding, as it is related to how the food insecure households cope with food access insecurity, and to provide well-researched feedback to policy and programme.

1.3 Research Objectives

The primary objective of this research was to investigate the social, economic and demographic factors in coping with food insecurity among households in urban slum areas of Ethiopia. The specific objectives were to:

i. Explore the state of food insecurity in Ethiopia across time and urban hierarchies

ii. Investigate the relationship between household structure and coping with food access insecurity in urban slum areas of Ethiopia

iii. Investigate the relationship between household economic resources and coping with food access insecurity in urban slum areas of Ethiopia

iv. Investigate the relationship between social protection programs and coping with food access insecurity in urban slum areas of Ethiopia

v. Investigate the relationship between urban-rural linkage and coping with food access insecurity in urban slum areas of Ethiopia

1.4 Research Questions

The study attempts to answer the following research questions:

i. What is the level of food insecurity in Ethiopia across time and urban hierarchies? What is the variation in the prevalence of food insecurity across factors such as household size, household headship, household structure, sources of income, and participation in social protection programs?

ii. Is there a relationship between household structure and coping with food access insecurity? How factors such as young children in the household, gender of the head of the household and educational status of the head of the household related to coping with food access insecurity?

iii. Is there a relationship between household economic resources and coping with food access insecurity? How assets and income sources relate to coping with food access insecurity

iv. Is there a relationship between social protection programs and coping with food access insecurity? How access to urban productive safety net programs and access to microfinance institutions relate to coping with food access insecurity?

v. Is there a relationship between urban-rural social linkage and coping with food access insecurity?

1.5 Significance of the Research

Scholars and development agents (Elliott 2006; Von Braun et al. 2009) stressed the urgency of the study of food security in an urban context and its significance as a contribution to the development effort. Given the fact that population growth has a significant influence on the consumption and availability of food, scholars (Godfrayet al. 2010; Thomas & Zuberi 2012) emphasised the need for investing in research sooner rather than later to generate a comprehensive understanding to develop appropriate interventions to enable the food system to cope with challenges in the coming decades. This has also been emphasised in a joint position paper of the ministers in charge of social development in member states of the African Union (AU) wherein they urge national level member states to develop and implement comprehensive family-focused socio-economic policies to support, strengthen and protect families, particularly in vulnerable and crises situation (African Union, 2012).

Further to this, many of the studies on urban food security in Ethiopia, and elsewhere in the developing nations, are done in aggregate or are specific to the food security situation of bigger cities. In contrast, the characteristics of the slum dwellers and factors in coping with food insecurity in the medium- and small-sized towns are mostly overlooked. In this regard, this research could have its contribution to policymakers and programme managers in Ethiopia in designing future policies and programs while also provides an evaluation of the impact of the nationwide urban food security programme intervention across hierarchies of the urban centres. Hence, the significance of this research could be seen from its contribution to knowledge, policy, and practice.

Partly, the motivation for this research stems from the knowledge the researcher gained from the master's level studies he conducted in the fields of demography (2002) and social work (2011). The first one entitled "*Squatter Settlers in the Periphery of Addis Ababa: Characteristics and Links with the Inner City*" (Girma 2002), was quantitative research based on primary survey data from 400 squatter households. The nature of the study created the opportunity to learn the livelihood vulnerabilities of slum dwellers. The study result revealed the association between livelihoods of the slum dwellers in the outer circle of the city with economic activities in the inner city. The latter one entitled "*Stress in Prison: Coping Strategies and Implications for Social Work,*" (Girma 2011) was a mixed-method study combining a questionnaire survey and case story method, which familiarised the researcher with the literature of coping behaviour in dealing with stressful life situations. Besides the envisaged contribution to knowledge and strengthening urban food-related policies, this research would also advance the knowledge of the researcher to contribute to the national effort of addressing the complex developmental challenge in urban food security.

1.6 Definitions of Key Concepts

This section provides definitions of the concepts used in this study. These definitions are given to provide a standardised understanding of the terms. A broader definition of terms related to food security is described in a separate section under the literature review.

Household structure

The term household in this study is used as it is defined by the UN (2008) in that a household is a group of persons who make common provision of food, shelter and other essentials for living. According to this definition,

> *A household may be either: a one-person household, that is, a person who makes provision for his food or other essentials for living without combining*

> *with any other person to form part of a multi-person household; or a multi-person household, that is, a group of two or more persons who make common provision for food or other essentials for living. The members in the given household may pool their incomes and have a common budget for their living; members of a household may be related or unrelated persons or a combination of both* (UN 2008:114).

The population and Housing Census of Ethiopia (CSA 2007) also used the term 'household' as defined by the UN.

Economic Resources

In this study, the term economic resource has a broad meaning, encompassing both income and assets. Income denotes what members of the household earn from permanent employment or casual/daily labour; economic activities such as farming and small businesses; renting income; as well as, other income sources such as remittances, pensions, and provident funds. The term asset has a broader definition that is useful in some cases. In this study, the focus is only on durable assets that are the most relevant for food security outcomes. Measuring durable assets is a more focused way to gauge economic resources, and studying their impact on food security outcomes as it has a strong correlation with resilience and successful coping (Amendah et al. 2014; Devereux 1993; Fernanda et al. 2016). Specific examples of durable assets included in this study are household appliances, production equipment, valuables, and livestock.

Social protection

As defined by the United Nations Research Institute for Social Development (2010), social protection is concerned with preventing, managing, and overcoming situations that adversely affect people's well being. Social protection consists of policies and programs designed to

reduce poverty and vulnerability by promoting efficient labour markets, diminishing people's exposure to risks, and enhancing their capacity to manage economic and social risks, such as unemployment, exclusion, sickness, disability and old age (World Bank 2001). The European Commission views social protection as helping to reduce poverty and vulnerability and supporting inclusive and sustainable development (EU 2012). The UK government, DFID, defines social protection as a mechanism to help address risk, vulnerability, and chronic poverty (Arnold et al. 2011).

The broad classifications of social protection schemes include social assistance, social insurance, labour market interventions, and traditional or informal social protection (Browne 2015). Social assistance also referred to as "social transfers" are non-contributory transfers designed to provide direct, regular, and predictable cash or in-kind resources transfers to poor and vulnerable individuals or households (Arnold et al. 2011, Gentilini et al. 2014). Social protection scheme in Ethiopia follows the classification encompassing three components that are also used in the other developing world Fiszbein et al. (2014). The components of Ethiopian social protection landscape (relevant to the study of urban food security) include social insurance - contributory schemes that protect against shocks to health or employment; labour market interventions - such as job training; and social safety nets - which include targeted non-contributory interventions such as cash and in-kind transfers, labour-intensive public works, and humanitarian assistance. The social protection system of Ethiopia also recognises informal social support systems that include a wide range of support mechanisms within the extended family structure and other social institutions. Also, the National Social Protection Policy of Ethiopia (2014) considers Micro and Small Enterprise (MSE) development an essential vehicle to address the challenges of an unemployed segment of the population through the creation of small and micro-businesses.

Urban-rural linkage

The degree of poverty underlies the rural-urban linkages as a dynamic concept suggesting that the linkage is used as a mechanism to recover from shocks and stresses (Davila 2002). The nature and intensity of rural-urban linkages and the definitions thereof vary between geographical regions as well as in response to economic, political and environmental factors. A comprehensive definition of urban-rural linkage used in the current study is that it refers to a flow of goods, people, information, finance, information, and social relations across space, linking rural and urban areas as stated in Tacoli (2015). Urban-rural linkages can also be understood as a link between sectors (agriculture, industry and services), which is central to the structural changes taking place in both rural and urban areas (Lesetedi 2003) but not dealt here.

Urban hierarchy

The hierarchical relationship among cities is of considerable significance in this study as it involves socio-economic disparities. Different disciplines such as geography, sociology, and urban economics characterise urban hierarchies in terms of power-law and relations dictated by the assumption that human settlement properties vary continuously from the smaller towns to the bigger cities depending on size and scale of a city to its infrastructure and social dependencies (Bettencourt 2013). In this study, urban sites are classified in hierarchies using population size as it is a widely used method in empirical studies (Dobis et al. 2015; CSA 2012).

Urban slum

Identification of the scope and extent of slum communities is an important indicator associated with UN-Habitat work as slums are generally regarded as the most extreme forms of deprivation and exclusion challenging sustainable and inclusive urbanisation (Arimah & Branch 2011). It is not easy to provide an exact or universally agreed definition yet;

therefore, UN-Habitat instead defines the characteristics of urban areas to categorise as a slum. According to UN-Habitat (2003:14-15), urban slums are characterised by lack of essential services, substandard houses, *"overcrowding and high density, unhealthy living conditions and hazardous locations, insecure tenure, informal settlements, and prevalence of poverty and social exclusion"*.

1.7 Organisation of the Thesis

This thesis is organised into seven chapters supplemented with a list of references and appendices. The first chapter presents the general background of the study, statement of the problem, objectives of the study, research questions, significance of the research, definitions of key concepts, and this section of organisations of the research. Chapter Two presents a review of related literature followed by the theoretical and conceptual framework of the study. In this chapter, concepts and theories related to food security and empirical studies of food insecurity and coping strategies of urban households are reviewed. Chapter Three describes the methodology of the research design, sample size estimation and sampling procedures, study tools, data collection process, ethical considerations, research validity and reliability, and data analysis and reporting. Chapter Four presents an analysis of the state of household food insecurity in Ethiopia across time (specific objective 1 of the research) based on a descriptive analysis of secondary data from the Household Consumption and Expenditure Survey (HCES) and Welfare Monitoring Survey (WMS) at a national level in 2004/5, 2010/11, and 2015/6). Chapter Five deals with the analysis of primary field data focussing on food insecure urban households selected from three urban sites representing a small-sized town, medium-sized town and big city. Chapter Six presents a thematic discussion of the results based on the specific objectives of the research. Finally, Chapter Seven provides conclusions, implications and recommendations.

1.8 Conclusion

This chapter set the background of the study and put the research within the domains of urban food security. The problem statement of the research topic, namely "*Coping Mechanisms of Food Insecure Households in Urban Ethiopia*" was contextualised and justified. This chapter also provided analytical information to justify the timeliness of the study for Ethiopia as it strives to implement the UPSNP in the major towns. However, the nature of the livelihoods and the corresponding strategies that households adopt to cope with food access insecurity along the continuum of the urban hierarchies yet demand a more subtle explanation. Further, the objectives and research questions have been clearly outlined. Lastly, the introduction chapter outlined the structure of the thesis for ease of navigating through the document. The next chapter reviews the extant literature to place the thesis within the context of the study topic and to provide the conceptual framework guiding the methodology, analysis, and interpretation of the study result.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter deals with the review of extant literature to place the thesis within the context of the study topic and to ascertain the relationship with other studies in the subject matter. This chapter lays out the conceptual definitions of food security and its modification since the issue of food security was placed on the global agenda. Moreover, a review of the widely used food security measures and their applications in food security research is included. This chapter also deals with a review of literature on the state of food security across different regions of the world across time, including an empirical review of the impact of food insecurity on socio-economic development. The literature review also engages the urban nature of food security globally and across the developing regions, including the debate surrounding urbanisation, development, and food security.

In this chapter, the researcher reviewed existing literature on the interplay of demographic, social, and economic factors of food insecurity in the developing nations, including different sub-regions of Africa, Asia, and Latin America. The review also covers concepts, approaches, and empirical evidence of social protection as it is an important policy instrument in addressing the pressing global concern - ending poverty and hunger in developing countries. The nature of urban-rural linkages and its significance as a welfare option for low innncome urban households focusing on developing nations is also discussed. The final section of this chapter provides the consulted theories and the conceptual framework drawn to guide the research design, analysis, and interpretation of results based on the reviewed literature.

2.1 Food Security Definitions and Measures

In this section, the researcher reviewed extant literature on the history of food security definitions and the different indicators used by different organisations for food security analysis, monitoring, and programming. The development of both the definition and the measurements of food security follow the international agreements of the 1996 FAO World Food Summit. The review of literature on definitions and indicators of food security in this section helps to follow the review in the subsequent sections of this chapter and the analysis and discussion chapters at the later stage.

2.1.1 Food Security

The concept of securing an adequate and suitable supply of food for everyone was coined and taken up globally during the Conference of Food and Agriculture at Hot Springs, Virginia, during the Second World War in 1943. Representatives of 44 nations including Ethiopia, Egypt, Union of South Africa, and Libya participated from Africa (Philips 1981) that led to bringing FAO formally into existence at the first session of the FAO Conference, held in Quebec City, Canada from 16 October to 1 November 1945 (Shaw 2007). Since the approval of the FAO constitution in 1945, the issue of food security and its definition has undergone several modifications.

The focus during the 1970s was on ensuring the availability of food as well as attempting to guarantee price stability both nationally and internationally through increased food production and the use of food surpluses as there was a conception that the whole problems of food security stem from a series of food crises and outbreaks of famine (FAO 2002). Realising the underlying cause of food insecurity that it was not so much of the food supply the definition of food security took in the economic, as well as the physical aspects of food

availability and the attention was drawn to ways to alleviate poverty. The definition was further widened when Amartya Sen's Essay on 'Poverty and Famines' came out in 1981. In his book, Sen (1981:1) made the point that *"starvation is the characteristic of some people not having enough food to eat. It is not the characteristic of there being not enough food to eat."* Sen's contribution resulted in modification of FAOs definition of food security in 1983 with the factor of access to those of production and price stability towards a broader context of poverty and lack of development resulting in the reappraisal of the food security concepts and approaches (FAO, 1983).

The World Food Summit's 1996 definition of food insecurity includes all the previous developments and the components of quality and type of food supplied. The FAO definition of food insecurity stated as "A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and active and healthy life" (World Food Summit, 1996). Factors that lead to a situation of food insecurity include *"non-availability of food, lack of access, improper utilisation and instability over a certain period"* (Napoli et al. 2011:9). Food insecurity, hence, refers to the failure of livelihoods to guarantee entitlement, access, utilisation, and instability to enough food at a household level.

In this study, the term food security is consistently used as it is defined in the 1996 World Food Summit. The definition encompasses four dimensions of food security (availability, access, utilisation, and stability) that provide a useful tool for food security analysis (Pieters et al. 2013; WFP 2009). Availability refers to the sufficiency of the amount of food that is present in each country or region through domestic production, imports, or food aid (WFP 2009). Whereas, *"access is ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods either through production,*

purchase or donation for a nutritious diet" (Gross et al. 2000:5). Access has both economic and physical dimensions: economic access to food at a household level implies the capacity to generate the income that is necessary to purchase food at market prices and physical access primarily concerns the state of the infrastructure and market facilities (Sassi 2015). The other component utilisation refers to "the way the body makes the most of the various nutrients in the food. Sufficient energy and nutrient intake by individuals are the results of good care and feeding practices, food preparation, and diversity of the diet and intra-household distribution of food" (FAO 2008:1). Utilisation is an aspect of a biological process of intake and metabolism of food while stability is referred to as the temporal determinant of food and nutrition security affecting aspects of availability, access and utilisation (Gross et al. 2000). According to Tacoli et al. (2013), if one has enough food intakes today, it might still be considered as food insecure if the level of security fails to sustain over time. Some of the factors affecting the stability of a household's food security include "adverse weather conditions, political instability, and economic factors such as unemployment, and rising food prices" (Tacoli et al. 2013:2).

The 1996 World Food Summit's definition of food insecurity also refers to shortages of socially acceptable and nutritionally safe and adequate food or lack of access to acquire it even when food commodities are available in the local market. Socially acceptable food implies without resorting to emergency food supplies, scavenging, stealing, or other morally degrading coping strategies.

Food insecurity is also divided into two types- chronic and transitory - depending on how long the shortage extends. The World Bank policy study report *Poverty and hunger: issues and options for food security in developing countries* defined "chronic food insecurity as a continuously inadequate diet caused by the inability to acquire food" (Reutlinger 1986:1) due

to the inability either to buy enough food or to produce their own. Whereas, " transitory food insecurity is defined as a temporary decline in the household's access to enough food possibly due to instability in food price, food production or decline in household income" (Reutlinger 1986:1).

2.1.2 Coping with Food Insecurity

Experiencing food insecurity causes stress at all levels of social organisation - individual, household, and national levels. Several compensatory coping mechanisms come into play to offset the stress because of food insecurity (Coates et al. 2006; Quisumbing 2013). Coping strategies aim to ensure that the food security of the household returns to a normal state. Food insecurity related stress, which led to coping responses, might well be addressed in some situations while not in others. Household's response to the food insecurity related stress is expected to vary depending on the available social, economic, and demographic resources they have, and their experience in dealing with a similar problem in the past. According to Peng et al. (2018), coping is related to social networks, family structure (nuclear/extended), and contexts such as living and working conditions, political situation, socio-economic situation, cultural values, employment opportunities, religion, among others.

Corbett (1988) categorises the coping strategies adopted by households based on their specific characteristics into three separate stages.

> T*he first stage of coping with food insecurity (sometimes called adaptation coping strategies) is marked by the initial stage of inability to provide a sufficient amount of food to all members of the household. At this stage, households endeavour to cope with the situation through a reduction in dietary intake, consumption of cheaper foods, and reduction of the frequency of meals* (Corbett 1988:1107).

The responses put into action at this stage are reversible and may not damage livelihoods and future productive capacity of households (Corbett 1988; van der Kam 2000). Strategies employed in the second stage, also called crisis strategies, are characterised by taking high-interest loans as well as the sale of either, or both, non-productive and productive assets including livestock and land (Frankenburger 1992). In the second stage, the responses are less reversible as households are forced to use strategies that reduce their productive assets and threaten their future livelihoods as priorities change from asset ownership to food consumption (Corbett 1988; Hoddinott 2006; van der Kam 2000), which permanently lowers future options of food consumption. In the final stage, a prolonged food crisis leads households to a dire situation in which impoverishment, a growing dependency on charity and migration are the typical outcomes (Corbett 1988). In this final stage, having exhausted all coping mechanisms, households would be utterly dependent on aid or outside support for survival (Corbett 1988; van der Kam 2000).

Resilience, though not being the focus of this study, is another notion closely related to coping with stresses of food insecurity in that it represents a long-term coping strategy. USAID (2012) defined the concept of resilience as the ability of people, households, communities, countries and systems to cope with both anticipated and unanticipated adverse shocks and vulnerabilities. Hence resilience is a fundamental measure of coping with both acute and chronic food insecurity in ensuring food and nutrition security targets of the SDGs (FAO et al. 2017). Resilience is a factor that has been initially used as an indicator of food security itself, but currently, it is being measured as an outcome of food security (Ansah et al. 2019).

2.1.3 Food Security Measures

This section reviews some of the most commonly used indicators of food security. The global community relies on proxy indicators of food security, that are only partially attending to components of the food security, and no food security indicator satisfies all the four pillars in the global definition of food security - availability, access, utilisation, and stability (Upton et al. 2016). The indicators can be generally classified as a macro (national level) and micro (household and individual level) food security indicators.

The prevalence of undernourishment, FAO published periodically in its *State of Food Insecurity report*, is the most widely used macro-level indicator in food security research that measures the availability of enough food energy to cover the minimum need in a country or region (FAO 2013). The proportion of undernourished is the population lying below a minimum energy requirement level based on national level estimates of food production, food consumption and income or expenditure data from sample household surveys (Naiken 2003). The indicator, though used widely, is subject to criticism and is considered to be unreliable in the context of countries that are most food insecure (Smith et al. 2014). As it is an aggregate measure, it may not apply to households in different contexts - it assumes the stability of food access throughout the year and that the available food is safe to eat by all members of the population.

Household survey produces data on food energy consumption per capita, which is calculated by dividing each household's average daily consumption by the number of household members and used for comparison against dietary energy requirements (Carletto et al. 2013). The process involves converting household-level information on consumption of food items into the individual-level intake of kilocalories and use per capita or adult equivalent calculations. In which case, a recent report, "*Comprehensive Food Security & Vulnerability*

Analysis (CFSVA): Ethiopia" (CSA & WFP 2019) also made its analysis using adult equivalent calculations.

Household or individual-level survey data mostly provide micro-level indicators emphasising the different segments of food security. For instance, survey data on household income, assets, and expenditure can be used as an indicator of poverty, and it is a proxy indicator of the access component of food security. The other commonly used household food security measures include Household Dietary Diversity Score (HDDS), Food Consumption Score (FCS), Coping Strategies Index (CSI), Household Food Insecurity Access Scale (HFIAS), and anthropometric measures.

HDDS is a commonly used proxy indicator for calorie intake based on a count of food groups consumed. According to Babu and Sanyal (2009), dietary diversity occurs because of income changes and rapid growth in urbanisation and is an indicator of improved nutritional status of the population. The indicator calculates the number of different food groups consumed to identify the quality of the diet in a better way (Swindale & Bilinsky 2006). The variation on the dietary diversity theme is FCS, which is "a composite score based on the dietary diversity, food frequency, and relative nutritional importance of the various food groups consumed" (WFP 2008:5). FCS measures the consumption of the food groups during the seven days before the survey. The food groups are cereals (bread, rice, maise, barley) and tubers (potatoes, sweet potatoes); pulses and nuts (beans, lentils, peas, peanuts, and the like.); vegetables; fruits; meat and fish (all types); dairy products (milk, yoghurt, cheese and other milk products); sugar, honey; and oil, fat, butter (WFP 2008:20). The higher the FCS is, the higher will be the dietary diversity. The frequency that the household consumes the food group indicates the adequacy of nutrients that a household achieves. Regrouping the indicator (FCS), which is a continuous variable, using thresholds divides households into three groups

- poor food consumption, borderline food consumption and acceptable food consumption (WFP 2008:9).

The Coping Strategies Index (CSI) is *"an index primarily about access to foods based on the responses to a series of questions about the occurrence and frequency of various food-related strategies, such as the need to beg or borrow to procure food, reduce meal frequency or portions, or consume seed stocks"* (Upton et al. 2016:15). Maxwell and Caldwell's (2008) manual on CSI gives a detailed illustration of the conceptual background, definitions, and application of the index. The Coping Strategies Index (CSI) is an indicator of household food security that is "relatively simple and quick to use, straightforward to understand, and correlates well with more complex measures of food security" (Maxwell et al. 2003:3). It is constructed based on a series of questions about how households manage to cope with a shortfall in food for consumption. The index measures behaviours related to food consumption by counting the frequency and severity of behaviours in which people engage when they do not have enough food or enough money to buy food. In the beginning, the CSI was a context-specific indicator of food insecurity. The 2008 version of the manual revised CSI based on feedback that certain behaviours were much more universal than first thought. The revised version of CSI (rCSI) holds only these universal behaviours. Since rCSI is measuring the same behaviours in all cases, it has a more significant application in comparing results across different contexts and geographic locations.

The other related measure includes the Household Food Insecurity Access Scale (HFIAS) that is used to assess household-level food access (FAO, 2012). Using HFIAS along with FCS is helpful to address both the quality, quantity and access components of food security. The HFIAS score is a continuous measure of the degree of food insecurity (access) in the household in the past four weeks. Both the CSI and HFIAS are experiential indicators

gathered by asking households or individuals to report their personal experience. The HFIAS consists of a set of nine questions that have been used in surveys around the world and is a useful tool in identifying the food security status of households (Coates et al., 2007). The information generated by the HFIAS can be used for assessing household food security status across geographic regions as well as for monitoring programs and projects by measuring the prevalence of household food security and identifying changes over time (Coates et al., 2003). The HFIAS Indicator Guide provides an elaborated definition of the four levels of household food insecurity:

> *A **food-secure** household experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely. A **mild food insecure** (access) household worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. A **moderate food-insecure** household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions. A **severe food-insecure household** has graduated to cutting back on meal size or the number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. It means that a household that experiences any one of these three conditions even once in the last four weeks is considered severely food insecure.* (Coates et al, 2007:19-20)

The other individual-level measure of food security used in most cases is anthropometric measures that include height, weight, body fat, and muscle mass used to calculate body mass index. Furthermore, child malnutrition indicators such as weight for height ratio (or mid-upper arm circumference - MUAC) are used to estimate rates of wasting and height for age ratio to estimate rates of stunting. These measures are suitable for assessing food security outcomes; however, they are also affected by non-food related factors such as different ailments (Upton et al. 2016).

Many of the measurements discussed above are essential and useful, but they only provide a partial assessment of the food security status. Given the multidimensional and complex nature of food security, the need for the application of a variety of indicators has long been recognised (Leroy et al. 2015). Concerning the use of a combination of indicators, Maxwell et al. (2013) suggested that combining two measures - one that broadly captures the quality, and one that broadly captures sufficiency in terms of quantity improves the classification of food security status of households. Accordingly, the researcher used four of the different measures to provide empirical measures of different components of food insecurity. The measures used are adult intake of kilocalories, FCS, rCSI, and a combination of FCS and rCSI in the analysis of food security in Ethiopia based on the secondary data source (Chapter Four). Primary data analysis (Chapter Five) used FCS, rCSI, and HFIAS, where rCSI is used as an independent variable in the multivariate regression analysis of coping with food access insecurity.

2.2 The State of Food Security

Addressing the global issues raised around all the four pillars of food security -availability, access, utilisation and stability - and attending to the rising stress to sustainably tackle food insecurity remains a challenge as food demand increases at a rate even faster than the

population growth (Calicioglu et al. 2019). Historically food insecurity is not evenly distributed across the world (Ashley 2016). This section provides an empirical review of the level of food insecurity across the different regions of the world and the trend across time-based international food security reports. The review also deals with the analysis of the food security situation in Ethiopia across time and reviews the available literature on the impacts of food insecurity.

2.2.1 Global Situation

Two of the editions of *The State of Food Security and Nutrition in the World*, published jointly by different international bodies (FAO, IFAD, UNICEF, WFP and WHO) provide food security and nutrition measures as part of the monitoring progress towards both the targets of ending hunger and ensuring access to food by all (SDG Target 2.1) and eliminating all forms of malnutrition (SDG Target 2.2) (FAO et al. 2017:3). The reports offered empirical evidence that hunger was slowly on the rise. The evidence in the 2019 edition (FAO et al. 2019:6) reveals that the prevalence of undernourishment showing a steady decrease from 2004 through 2015, remained around 11 per cent showing no significant change since the launching of the SDGs (10.7% in 2016; 10.8% in 2017; and 10.8% in 2018). The absolute number of people suffering from hunger, however, continues to increase. For instance, the current estimate (FAO et al. 2019:9) shows that there are more than 821.6 million hungry people in the world, 36.2 million more than the 785.4 million at the closing of the MDGs in 2015. Regionally, undernourishment is the highest in SSA at a prevalence rate of 22.8% followed by Caribbean 18.4 per cent, and Southern Asia 14.7 per cent, (FAO et al. 2019:8).

Global estimates of the SDG Indicator, monitoring the progress towards the target of ensuring access to food for all (FAO et al. 2019) shows that over two billion people in the world do not have regular access to safe, nutritious and sufficient food. The indicator

includes those affected by moderate levels of food insecurity and those suffering from hunger. The result is worrying as it challenges the global target of states aiming to achieve zero hunger by 2030. Prevalence of hunger in the Caribbean region has also been highest at 18% following the prevalence of hunger in SSA.

However, the prevalence of undernourished people varies across sub-regions of the developing world (FAO et al. 2019:8). In Africa, East Africa has the highest prevalence of undernourishment in the developing world. Here, near to one-third of the population (30.8%) in this region are undernourished, and the trend since 2010 shows no change. The prevalence of undernourishment in Middle Africa is also the second-highest at 26.5%, with no improvement during the past decade. The prevalence of undernourishment in Africa is the lowest in Southern Africa and Northern Africa at 8 per cent and 7.1 per cent respectively. In West Africa, the prevalence of undernourishment is rising that it increased from 10.4 per cent in 2010 to 14.7 per cent in 2018. In Asia, Southern Asia and Western Asia have the highest prevalence of undernourished people, the two sub-regions have experienced opposing trends since 2005. The prevalence of undernourishment in Southern Asia shows a decline since 2005 (21.5% in 2005 to 14.7% in 2018). Contrarily, undernourishment increased in Western Asia (that rose from 9.4% in 2005 to 12.4% in 2018).

2.2.2 Food Insecurity in Ethiopia

Ethiopia is a core part of the Horn of Africa, the region that continues to be a part of the world suffering from food insecurity mainly because of drought and conflict. Ethiopia's name recurs whenever famine and food insecurity are the subjects of discussions. Recorded evidence shows that famine in Ethiopia has a long history. For example, between 1540 and 1742, there were more than ten major famines (Zewde 1976). The so-called "great Ethiopian famine" hit the country during 1888-92 (Pankhurst 1966:97) possibly killed one-third of the

total population (Human Rights Watch, 1991:28), and it is still remembered as *kifuqan* (meaning evil days). The deadliest famine occurred during the early '70s that killed in a range of around 100,000 in a population of about 27 million in northern Ethiopia; mainly Wollo and partly the Tigray regions (Sen 1981:86).

According to the CSA (2013:45) projection, Ethiopia has a population of about 100 million, and about 22 million of the population lives in urban areas. In the period of 2003/04 - 2014/15 Ethiopia's economy has experienced robust growth averaging 10.8 per cent per year, which is significantly high as compared to the regional average of 5.4 per cent (World Bank 2017). The International Monetary Fund's (2018) World Economic Outlook predicts 8.5 per cent growth in the 2018 fiscal year, which ends on July 7th, 2019, surpassing the growth rate of most advanced economies. Similarly, the national consumption survey results (2004/5, 2010/11, and 2015/6) generally revealed an increasing trend in calorie intake for the country. Nonetheless, it remained consistently lower in urban areas as compared to rural areas. An in-depth descriptive analysis of the state of food insecurity in Ethiopia during the period of 2004/5 – 2015/16 is addressed in detail in Chapter Four. Gross daily calorie intake per person was 2073, 2337, and 2457 in urban areas and 2397, 2,479, and 2585 in rural areas during the respective periods (CSA 2007; CSA 2012; CSA 2018). The figures show that growth in the economy resembles a similar pattern with an overall increase in calorie intake during this period.

Despite the achieved economic progress and the apparent improvement in calorie intake, Ethiopia still ranked 107th in 2016 from among 118 countries included in the Global Hunger Index (GHI) (VonGrebmer et al. 2016:13). Furthermore, the progress made in calorie intake is not equitably distributed across all social groups in urban and rural areas. The index of consumption inequality measured by the Gini-Coefficient has shown a slight increase (from

0.298 in 2010/11 to 0.328 in 2015/16). The rise in inequality was also witnessed for both urban (from 0.37 to 0.38) and rural (from 0.27 to 0.28) areas of the country"(National Planning Commission 2017:19-20) reflecting higher inequality in urban centres than in rural areas.

2.2.3 Impact of Food Insecurity

The living body is a complex machine in the creation that every single detail in the body is integral. However, the need for the body to work in harmony, to accomplish the task of basic survival and to meet the very essentials of life our body's underlying physiological need (food) has to be met. It is a worrying fact that about 2 billion people in the world are experiencing moderate or severe food insecurity (WFP et al. 2019). As described by Maslow (1970), when this need is unsatisfied, it dominates the organism's inherent capability to function. Several studies explore the multidimensional impact of food insecurity. Pourreza et al. (2018) analysed the relationship between food security, health and economic growth and showed that the extent of income variation among countries is characterised by variation in health. The study argued that better nutritional status and health contribute to faster economic growth. In addition to factors influencing health including access to medical care, household economy, physical conditions (access road and transportation facilities), and other conditions (such as where people live, learn, work, and play), Hartline-Grafton (2017) identified food insecurity as a significant social determinant of health outcomes and disparities associated with some of the most severe and costly health problems. A review of selected recent research by Gundersen and Ziliak (2015) that examined the association between food insecurity and health outcomes consistently found food insecurity to be negatively associated with health. An earlier study in a longitudinal survey of welfare recipients, conducted by Siefert et al. (2004), also showed evidence on the association between household food

insufficiency with poor physical and mental health. Burchi and Muro (2012) also provided some insights on the impact of food insecurity on development outcomes such as education, health and nutrition, and security.

When viewed from the health perspective, the standard classification of households based on the level of food insecurity as food secure, marginally food secure, and food insecure has limitations. Research presented at a symposium entitled *Food Insecurity and Health across the Lifespan* (Lee et al. 2012) argued that marginally food-secure and food-insecure households have a similar level of adverse health outcomes. The latest FAO report on *the state of food security in the world* has indicated that "children living in households classified as moderately or severely food insecure in several countries in Latin America and Africa are more likely to be stunted" (FAO et al. 2019:42). A study conducted in Brazil on the negative impact of food insecurity among children hospitalised for pneumonia or diarrhoea has also revealed worse health conditions of those who grow up in food-insecure households compared with those in food-secure households (Poblacion et al. 2016). It implies that clinicians and public health workers need to avoid considering moderate food security as low-severity food insecurity instead of food security.

Several pieces of research and global reports have shown household food insecurity as the main correlates of childhood stunting in the most critical period of child growth and development, leading to a health impact during their adulthood (Baer et al. 2015; Moges et al. 2016). A recent study by Jebena et al. (2017) on the effect of food insecurity on adolescents' health and wellbeing in Ethiopia, using a mixed effect logistic regression based on data from a longitudinal family survey of youth, shows the relationship between food insecurity and adolescent's sexual reproductive health. The findings of the study imply the need for considering the broader social and economic structure contributing to the food insecurity

intervention in promoting adolescent health and wellbeing in addition to behavioural and psychological factors.

For countries with a high number of people infected with HIV, food insecurity also has a significant effect on the management of medical treatments. According to a longitudinal study in rural Uganda among HIV-infected individuals enrolled in an antiretroviral therapy programme revealed an association between severe food insecurity with opportunistic infections and increased hospitalisations (Weiser et al. 2012:6-8). The study also provided evidence on how food insecurity can compromise sustained antiretroviral therapy in a resource-limited setting.

Food insecurity is also a threat to the development of the education sector. Cady (2014), for instance, demonstrated the potential adverse outcomes along the educational hierarchies from elementary to college levels and recommended school administrators to determine the scope of food insecurity in their schools and respond accordingly in partnership with other potential actors to alleviate its negative impact on students. A school-based cross-sectional study (Tamiru et al. 2016) conducted among primary school adolescents in Jimma zone of Oromia region, Ethiopia similarly revealed a positive association between household food insecurity and poor school attendance.

Longer-term impacts of food insecurity on the labour market and the need for sustained intervention have been promoted by international organisations (FAO 2015; FAO 2017). Studies Lightman et al. (2008) also suggested restructuring and welfare reform on health and hunger among the vulnerable and marginalised groups to provide feedback to the policymakers. In the political or economic spheres Brinkman and Hendrix (2011), also discussed that food insecurity combined with other factors could be the factor that determined the incidence of violent conflicts and emphasised the contribution of food assistance to

peacebuilding, restoring trust in governments and rebuilding social capital. *The State of Food Security and Nutrition in the World report* under the subtitle of *building resilience for peace and food security* (WFP et al. 2017) described food insecurity as a potential trigger for violence and instability as a manifestation of the context of inequalities and unstable institutions.

With an increasing rate of urbanisation in SSA, access to food is having a strong urban dimension (Matuschke 2009; Sonnino 2016). Empirical data from the consumption and expenditure national surveys in Ethiopia (CSA 2007; CSA 2012; CSA 2018) supports this argument as the calorie intake per adult equivalent is consistently lower in urban areas indicating food insecurity in urban areas is worse than the rural areas. The next section presents a review of the literature dealing with urbanisation and food insecurity.

2.3 Urbanisation and Food Security

This section provides an overview of the levels and trends in urbanisation globally and across the geographic regions. The literature review in this section also spans over the urban nature of food security. This section elaborates the association between economic growth and urbanisation globally and within the context of the developing nations. Besides, the review elaborates an overview of arguments among scholars in relating urbanisation to the development and challenges of the urban poor in accessing food in the cities of the developing world. The literature review also covers the role of the informal food market in the urban food system.

2.3.1 Urbanisation Trend

Urbanisation has a long history along with the development of human life. The available evidence of the origins of urbanisation goes back to some 6000 years when human life was

transformed from hunting and gathering wild food to living in densely populated urban settlements with remarkable structural features providing much comfortable living conditions (Gottdiener & Hutchison 2011; Light 1983). As theorised by Childe (1950) ancient cities rose with a distinct form of the social organisation providing the social basis for a modern civilisation that differed from the rural settings. Cities, in general, are also places where various services and goods can be found sufficiently and where individuals and groups can realise their ambitions and aspirations (UN-Habitat 2013). Modernisation theorists represented development as a process in the evolution of socio-economic progress following somehow a similar path as societies transition from traditional ways of living to modern (Fox 2013). Urbanisation, which is synonymous with industrialisation and secularisation (Ranis 2004) was understood to be a natural derivative of industrial development determined by the growth of employment opportunities in urban areas as a result of industrial investment (Rostow 1960). Urbanisation changes the demographic and social structure of both urban and rural areas involving changes in occupations, lifestyle, culture and behaviour (Hussain & Imitiyaz 2018; United Nations 2019). According to United Nations (2019:10), the level of urbanisation of a given nation is "typically expressed as the percentage of population residing in urban areas, while the definition varies according to criteria used by national governments for distinguishing between urban and rural areas".

The FAO report (2015) shows that by 2020, up to 85 per cent of the poor in Latin America are expected to live in towns and cities and so will be nearly half (45 per cent) of the poor in Africa and Asia. According to *The World Urbanisation Prospects* report of 2018 (UN 2019:9), the world population grew from 750 million to 4.2 billion between 1950 and 2018 and is expected to reach 6.7 billion by 2050. Between these periods, the world's population is expected to change from 2.5 billion to 7.6 billion. According to UN report, rapid urbanisation *between 1950 and 2018 the world's population was urbanising rapidly, with the proportion*

urban rising from 30 per cent in 1950 to 55 per cent in 2018" (UN 2019:2) and expected to reach 68 per cent in 2050. According to the UN report, urbanisation rate in the less developed regions crossed the 50 per cent margin in 2018, and it is expected that two-thirds of the population in these regions will be living in urban areas by 2050. The report also estimated that the population of Ethiopia would grow from 108 million in 2018 to 191 million in 2050. The urban population, which is 21 per cent in 2018, is also projected to increase to 39 per cent in 2050.

Along with a higher rate of urbanisation across Africa and Asia (UN 2014), the urban share of poverty has also continued to be rising over time (Hilderink et al. 2012). Contrary to the theory that urbanisation is associated with higher economic growth, scholars (Hilderink et al. 2012; Laros & Jones 2014; Ravallion et al. 2007; Sonnino 2016) argued that this relationship does not always seem to be valid in SSA where urbanisation process resulted in the growth of slum and informal settlement with a continued rise in urban poverty. Concerning this Crush and Frayne (2011) discussed achieving urban food security as an emerging development challenge of the 21st century, and they emphasise researchers to address the complexities of the urban food systems. Residents in urban slum areas are mostly low-income migrants from rural areas and are predominantly unemployed or work in an informal sector that they are more susceptible to food insecurity. According to Habitat (2016), 55.9 per cent of the urban population in SSA lives in slum areas. The proportion of slum population is even higher in Ethiopia, where 73.9 % of the urban population (13.6 million) lives in slum areas (Habitat 2014).

With the uneven spatial spread of urban centres, and the fast pace of urbanisation, the potential benefits of urbanisation in SSA countries are threatened (Alaci 2010). The accelerated urbanisation in SSA is unaccompanied by economic growth to produce the goods

necessary for the survival of its inhabitants such as basic needs such as food, housing, infrastructure, and employment opportunities (Habitat 2007).

The hierarchical relationship among cities is of considerable significance in studies involving socio-economic disparities. Different disciplines such as geography, sociology, and urban economics characterise urban hierarchies in terms of power-law and relations dictated by the assumption that human settlement properties vary continuously from the smaller towns to the bigger cities depending on size and scale of a city to its infrastructure and social dependencies (Bettencourt 2013). In his book *The New Science of Cities*, Batty (2013:30) suggests that to understand urban systems, one must view them not merely as places in space but as systems of networks and flows. Classifying cities with urban hierarchy approach using population size is a widely used method in empirical studies (Dobis et al. 2015; CSA 2012). Such classification is, however, criticised by some scholars (such as Lorenzen & Andersen 2009; Maliszewski & HUallachain 2012) that they advise using the rank-size distribution of cities to represent the urban hierarchy. The rank-size rule, also called Zipf's law, is one of the methodologies in the field of urban geography in the study of city size distribution and growth of cities (Gabaix 1999).

Alaci (2010) also suggested a regional planning tool (cluster formation) focusing on the potentials of small and medium-sized towns across the continuum of urban hierarchies to serve as a reliable instrument for settlement stabilisation which can lead to sustainable urbanisation. In a study of the role of small-sized towns in regional development and poverty reduction in Ghana, Owusu (2008) has also suggested regional development and poverty reduction strategies to focus on improved service provision and delivery through small-sized towns.

2.3.2 The Urban Nature of Food Insecurity

The phenomenon of rapid urbanisation across the developing regions has received increasing scholarly attention that with an increase in the rate of urbanisation poverty and food insecurity moves to the urban centres of the developing world (Laros & Jones 2014; Ruel et al. 2017; Sangraula et al. 2007; Sonnino 2016). Some scholars perceive urbanisation as a problem (Garrett 2000; Sangraula et al. 2007). Accoringlly, Satterthwaite et al. (2010) argued that there is a strong association between economic growth and urbanisation as urban poverty and challenges with food insecurity remain among the least urbanised ones. In another study, Cohen and Garrett (2010) also emphasised the vulnerability of poor urban dwellers to food price rises as they rely primarily on market purchases for their food and that food purchases account for the more significant share of their household expenditure. According to Cohen and Garrett (2010), most policy prescriptions focused on addressing constraints to address the supply side of food security. Related to this Crush and Riley (2017) examined the global, African, and South African contexts within which both urban development and food security agendas are framed and continued to have a dominant feature of rural bias. They suggested to further press for urban to be included in the food security agenda, and food to be included in the urban agenda for food security to be addressed substantively. Research in Gaborone, Botswana (Acquah et al. 2014) showed higher levels of urban food insecurity, no better than cities in other SADC countries, despite the economic performance of Botswana being much healthier than others in the sub-region are.

As the urban households primarily rely on food purchase, accessibility and affordability of food to the urban poor is likely to remain an increasingly pressing concern for governments and the global community (Tacoli 2017). Historical and political courses of urban food research in SSA is argued that urban food security has been neglected or engaged as a problem with a developmental concern rather than political matter (Battersby 2013). On the

discussion of political economy analysis to understand the challenges and dynamics around food security, Hajnalka et al. (2017: 1) stressed that

> *lack of progress in achieving food security and nutrition in practice was largely due not only to insufficient technical knowledge, policies or resources – but to the role of politics, actors, interests and institutions in shaping what happens on the ground.*

According to Tacoli (2017), the population in the global South lives in a situation where rapid urbanisation is taking place, and economic development and institutional capacities are weak and mostly ineffective. In the face of rapid urbanisation, expansion of slum communities, and stagnant economies, White et al. (2012) suggested that SSA is expected to constitute policy challenges during the coming years. The policy response requires a shift in a proactive urban approach to meet the housing, infrastructure and services needs of urban residents. A study by Szabo (2016:40) also showed that *"the rapidly urbanising countries with the lowest levels of human development are most at risk of food insecurity".*

Reviews of studies in Africa and South Asia (Carletto et al. 2015) have shown the role urban agriculture play and a positive statistical association between engagement in urban agriculture and dietary adequacy indicators in addressing urban food insecurity problems at a household level. Studies in urban areas of Ethiopia have also shown the contribution of urban agriculture in attaining urban household food security (Tefera 2010) the urban agriculture sector suffered from lack of a facilitating policy, high cost of the requisite inputs, and the absence of extension services (Mpofu 2013). Despite the positive contribution of urban agriculture to food security in urban areas, the urban poor in the slum areas is less likely to benefit as they are the worst affected under sheer lack of space and minimum facilities for living.

Urban areas characteristically tend to promote economic growth in aggregate than rural areas, and that urbanisation is often justified as a positive development (Overman & Venables 2005; Sangraula et al. 2007). However, the impact of urbanisation in reducing absolute poverty at a household level is not yet ascertained (Dociu & Dunarintu 2012). Rapid urbanisations in Africa and part of Asia challenge the capacities of cities to accommodate the ever-growing number of inhabitants, which lead to the development of slums and informal settlements posing a considerable threat to all the components of food security (Laros & Jones 2014; Matuschke 2009). The United Nations report on the World Urbanisation Prospects revealed that "as the world continues to urbanise, sustainable development challenges will be increasingly concentrated in cities, particularly in the lower-middle-income countries where the pace of urbanisation is fastest" (UN 2014:1). Comparing the wealthiest and poorest people, Flanagan (2010) in his book, *Urban Sociology: Images and Structure* described the contrast that the rich enjoy similar living standards throughout the world while the poor in cities of the developing nations endure a more significant deprivation in comparison to those living in the developed nations.

The global phenomena since 2008 have involved a multi-dimensional crisis spanning over a rise in unemployment, food shortages and consequent price rises (Habitat 2013). According to Matuschke (2009), employment opportunities are not sufficiently available, especially in small- and medium-sized towns. As urban dwellers are net food buyers and spent a large part of their disposable income on food (Matuschke 2009), the challenge makes urban sites places of deprivation, inequality and exclusion contrary to the notion of regarding urban as the home of prosperity. High food prices, low and irregular earnings and escalation of costs of non-food consumption items (such as housing) affect the food security of low-income urban residents (Tacoli 2013). A longitudinal study conducted on urban households in informal

settlements in Johannesburg, South Africa (Naicker et al. 2015) has witnessed very high food insecurity and a decline in the consumption of protein owing to global food price increases.

Food is often the primary expenditure of the urban poor. In Hanoi, Vietnam, low-income groups spend around 40 per cent of their total income on food; the poorest households and those living in smaller towns of Nepal and Cambodia spend nearly all their earnings on food, and yet the urban poor have limited or no access to nutritious food (Tacoli 2019). In a study at Kibera, Kenya (Marx et al. 2013) found that the two most common challenges in the slum were the tenant's inability to pay their rent and rent increases by the property owner. The study also found that food expenditure accounts for 61 per cent of the consumption while rent cost almost a third of non-food expenditure. Alem et al. (2014) also investigates the persistence and correlates of subjective and consumption poverty in urban Ethiopia using panel data covering 15 years. Their result showed that households with a history of past poverty continue to perceive themselves as inferior even if their material consumption is improved, and they receive remittance. Whereas having at least some sort of employment changes the perception of households as better positioned, albeit their real status being in real poverty.

The largest segment of the urban poor relies heavily on informal markets and street vendors for accessible and affordable food. Studies (Resnick 2017; Tacoli 2019) alluded food security policies in urban Africa that it face institutional, administrative, and political challenges as governments primarily try to focus on control, and often implement actions of violent eradication of the urban informal food economy. Several studies witnessed the significance of informal markets as a source of supplying food to the poor urban households. A study in a rapidly-growing city of Windhoek, Namibia (Nickanor et al. 2016) showed that most of the migrants settle primarily in the informal housing areas and they make use of various

strategies including receiving food transfers (food aid) and obtaining food from informal markets to mitigate their insecure food situation. Similarly, a study in Maputo, Mozambique, which is one of Africa's fastest-growing formal economies, witnessed that the informal sector is the major supplier of food to poor urban households and plays a critical role in the urban food system (Raimundo et al. 2016).

2.4 Determinants of Household Food Insecurity

Urban food security is a complex issue as it is an interplay of the household's demographic, social, economic, and cultural factors. Household composition is a useful demographic concept to show why households are formed in a particular way, how they function in society and their socio-economic significances. This section of the study presents a review of relevant literature in the developing nations including different sub-regions of Africa, Asia, and Latin America focusing on the role of demographic, social, and economic factors in ascertaining food security. The review of the extant literature on urban and rural areas of Ethiopia is also presented separately.

2.4.1 Determinants of Household Food Insecurity in Developing Countries

Household composition is a description according to specific characteristics of its members of the household that are useful in the analysis of household food security. According to Siegel and Swanson (2004), household composition is a concept determined by people living together in a given household and their relationships to one another. Bongaarts (2001) identified measures of the household composition that include household size, age-sex composition, members' relationship to head, household complexity (the degree to which non-nuclear members are present), and the gender of the household head. Wright (1994) has also shown that these factors affect the level of poverty in a given population. Improvements in

household welfare depend on who earns the income than the amount of income earned. According to Quisumbing et al. (1996), women tend to spend their income on food for the family than men. Studies have shown that households with children have a substantially higher rate of food insecurity, including those in the developed nations (Coleman-Jensen et al. 2013). Noting that slum areas are destinations for migrants from rural areas offering them access to housing and economic opportunities (Habitat 2016; Marx et al. 2013) migration status is also regarded as an essential variable for food security analysis. Similarly, a large-scale study based on household survey data from 89 developing countries (Castañeda et al. 2018) has shown that number of children, educational attainment, and living in an urban area were strongly and positively associated with welfare. Poor households headed by female and households with a higher ratio of dependents tend to have low dietary diversity (Mohiddin et al. 2012).

The progress towards achieving the SDG 2 and Zero Hunger targets in Asia and the Pacific countries continue to be slow (FAO 2018). A study of household food security and associated factors in urban and regional areas of Iran (Tabrizi et al. 2018) has revealed that family size, marital status, employment status, and the educational level of the head of the household were significant predictors of food insecurity. Similarly, research that explored the poverty–food security nexus, using an experience-based indicator of food security in a slum area of Kolkata, India (Maitra & Rao 2015) found that education, gender, and household composition are significant drivers of food insecurity among low-income urban households. Studies in this region of the world also showed that households use more stressful measures to prevent the situation of food insecurity. The measures include borrowing food or lending money from friends or relatives, buying food on credit, using reserves, relying on food aid, withdrawing children from school, sending children to work, and in case of extreme insecurity migration was witnessed (Gupta et al. 2015). A study in Bangladesh, by Santos et

al. (2011) also showed that the type of coping mechanisms the poor were using has negative welfare implications in the longer term, including the depletion of assets, reduction of essential consumption, and the use of high-interest loans. There is a similarity in coping mechanisms of food insecurity in developing countries. For instance, research conducted in the indigenous households of the communities of Sierra Tarahumara in Mexico (Cordero-Ahiman et al. 2018) revealed coping strategies such as relying on less expensive foods, purchasing food on credit, limiting portion size at mealtimes, skipping meals, and restricting consumption of adults to secure children's intake were the common coping strategies. Evaluation of the association of food insecurity with demographic and socio-economic conditions in urban households of Campinas, Brazil, with the application of bivariate multinomial logistic regression revealed that *"mild food insecurity was associated with demographic conditions while moderate and severe food insecurity was associated with socio-economic conditions"* (Fernanda et al. 2016:855).

Research by Angel and Tienda (1982:1363) examined the relationship between household composition and sources of household income among Hispanics, blacks, and non-Hispanic whites showed that *"extended family structure serves as a compensatory strategy for supplementing the temporarily or chronically low earnings"* of poor households. Similarly, a study on household living arrangements and economic resources among Mexican immigrant families (Leach 2010) showed that families that reside in an extended household living arrangements contribute about three-fourth of total household income. The finding may suggest that hosting families gain economic efficiency through extended household living arrangements.

The association of food insecurity and socio-demographic variables revealed a similar result across the West African region. Analysis of the effects of family size on household food

security in Osun state, Nigeria (Olayemi 2012) showed that large family size harms household food security. Using the Harmonized Nigeria Living Standard Survey (HNLSS) data of 2009/2010 Anyanwu (2014) also found a significant relationship between household poverty and household size and other social factors such as marital status, place of residence, and education. A study that focused on the assessment of household poverty and welfare among households in Ekiti State, Nigeria (Akerele & Adewuyi 2011) also found that educational levels of the household head and the spouse, gender of household head, and dependency ratio were factors with significant influence on household welfare. A mixed-method study by Osumanu et al. (2015) investigated the vulnerability of slum dwellers, and the resulting coping strategies of three spontaneous neighbourhoods in the Wa Municipality of Ghana revealed variation in the degree of vulnerability and coping strategies among slum neighbourhoods and gender of the head of the household. Another study of household characteristics and dietary diversity in Accra, Ghana (Codjoe et al. 2016) found low consumption of foods rich in micronutrients, such as fruits and dairy products, among households headed by female and the less educated. A study in Burkina Faso by Niankara (2018) also showed a similar result in those households with formally educated heads experience less food insecurity than those with less educated.

Despite the nations being food-secure nationally, a large number of households living below the poverty line in the Southern African region are food-insecure due to socio-economic factors limiting access to food (Masuku et al. 2017). A study on factors determining food insecurity among the food insecure in southern African countries has also revealed a similar result. The results of a household survey on determinants of vulnerability to food insecurity in the township of Kwakwatsi, South Africa (Ndobo & Sekhampu 2013) revealed that vulnerability to food insecurity was more prevalent in female-headed households and their vulnerability increases with an increase in household size and age of the household head. A

similar study in the City of Tshwane, South Africa (Adeyefa 2016) has shown food security is enhanced by increases in income, education, and employment of household head while the increase in household size, increases in the number of children below the age of five, and those relying on help remained food insecure. Concerning coping with food insecurity among a low-income neighbourhood in South Africa, Grobler (2014) found an increase in reliance on consumption coping strategies. Similarly, in Harare, Zimbabwe Tawodzera (2012) found that poor urban households adopt to enhance food insecurity by engaging in multiple income-generating activities, use of important social links to rural households, and access to remittances.

The Horn of Africa is one of the most food-insecure regions suffering from the worst food security in the world (Martin et al. 2018). In most of the literature reviewed the large family size and education were the recurring variables established as significant factors significantly affecting food security outcome of households. Household size may not be a significant contributor to the level of insecurity in a given household in a nutshell as the level of household vulnerability depends on the number of working members of the given households. In which case, a study by Gershuny and Sullivan (2014) suggested using the proportion of young age children than considering household size as a whole. Similarly, a study conducted by Amendah et al. (2014) among the urban poor in Nairobi, Kenya, revealed that formal employment, owning a business of some sort, rent-free housing, and being a member of social safety net improved the household food insecurity situation while the ratio of children under 15 years in the household increased food insecurity. A study in two informal urban settlements in Kenya has shown a positive effect of education for household food security (Mutisya et al. 2016). Research carried out in two densely populated wards of Kampala, Uganda (Pottier 2015) also showed how food-insecure households decreased their

consumption of the staple food due to the price rise and shifted to cheaper options and reduced frequency of diet to just one meal a day.

2.4.2 Determinants of Household Food Insecurity in Ethiopia

Ethiopia has achieved notable progress from economic growth between 2007 and 2017, and reduced prevalence of extreme poverty and hunger rates by half from 61 to 31 per cent (WFP 2019). Yet according to CSA and WFP (2019), the percentage of households with inadequate caloric consumption in Ethiopia (less than 2,550 Kilocalories per adult equivalent per day) was 31 per cent (24% in urban areas and 33% in rural areas).

In a review of the food security situation in rural Ethiopia (Mohamed 2017:94) outlined drought and land degradation, population pressure, instability and armed conflict as significant sources of food security problems. The review by Mohamed (2017) also identified the sale of livestock, employment, migration, obtaining grain loans, sales of wood or charcoal, small-scale trading, limiting the household size and reduced frequency of meal as primary coping mechanisms. By applying household food balance model in an ethno-culture context to determine food insecurity status of households in a rural district of Benishangul Gumuz region, a study by Notobosombo et al. (2014) shown that there were significant differences between ethno-cultures in their food insecurity status. The effect of such a difference may not hold among households in urban areas due to ethnic and cultural heterogeneity.

A study conducted in the agro-pastoralists region of Afar to identify determinants of household food insecurity and the local coping strategies (Negash et al. 2015) found out that access to agricultural extension services, participation in safety net program, educational status of the household head and household size were identified as significant covariates of household food insecurity. The most common coping mechanisms of the pastoralist

households include selling a household asset and withdrawing children out of schooling. A similar study conducted in rural communities of the suburb of Dire Dawa (Shimelis & Bogale 2007) identified a composite of various livelihood strategies such as an application of mixed crop-livestock farming, diversification of crop production, diversification of livestock production, and supplementation of off-farm activities. Livelihood strategies widely pursued by female household heads in Wolenchiti town of Oromiya region were somehow distinct from other rural areas that households use income diversification, frequent change of occupations, remarriages and involving children in income-generating activities (Metasebiya 2009).

A study (Asefach & Nigatu 2007) aimed at investigating the socio-demographic correlates of food security at household level in two most populous administrative zones of Southern Ethiopia revealed that household size; headship, marital status, and age of head of the household had a significant relationship with household food security. A recent study of household food insecurity and associated factors among households in Sodo town of Southern Nations Nationalities Peoples Region has shown that household headship status, the number of dependents, employment status of the head of the household were significantly associated with household food insecurity (Tantu et al. 2017). A community based comparative cross-sectional study of the level and determinants of food insecurity in East and West Gojjam zones of Amhara Region (Motbainor et al. 2016) has also identified women's education status, household size, diversification of income sources, livestock ownership, and agro-ecology zone were the significant determinants of food insecurity.

Food insecurity situation, as well as the coping mechanisms across urban and rural areas, differs. In line with this, Welderufael (2014) conducted a study with the application of econometric analysis of rural and urban households in Amhara region revealed that determine

food insecurity in urban areas. The factors identified were livestock ownership, farm inputs, farm size, drought, and illness determine food insecurity among the rural household. In urban areas, however, household size, consumption expenditure, age, and employment status of the head of the household were significant factors in determining food insecurity. Similarly, in Ethiopia, a study conducted on pensioner's household food insecurity and coping strategies in Jimma Town, Ethiopia (Kisi et al. 2018) has shown an association between factors such as household size, educational level and marital status of the head of the household and household food insecurity. An assessment by Teso (2015) on factors contributing to food insecurity in the other major town of Oromiya region, Nekemte, came up with a finding that tenure security, household livelihood diversity, access to entrepreneurship skill, household dependency ratio, and access to financial services were the significant determinants of food insecurity.

Studies have witnessed that food insecurity in major urban areas in Ethiopia is related to unemployment. The 2012 urban employment-unemployment survey of Ethiopia (CSA 2012) revealed that the highest unemployment rate is in Addis Ababa and Dire Dawa compared with the other major towns. Likewise, calorie intake among urban dwellers is the lowest in the two major urban areas in a national comparison. Consistent with this, the food security analysis based on the threshold of 2,550 kilocalories per adult equivalent per day the highest prevalence of food energy deficient households was found in Addis Ababa (CSA & WFP 2014:31). Another study set to identify the determinants of food insecurity in Addis Ababa city at the household level has also shown unemployment along with other household characteristics such as household size, household income, age, and education status of the head of the household, as well as poor access to credit, inadequate and low asset possession and income from remittance and gift, were found to be significant determinants of food insecurity (Sisay & Edriss 2012; Gebre 2012).

Several studies have shown that food price increase put adverse effects on increasing the vulnerability of urban households. A study result on the effects of food price shock between 2004 and 2008 in Ethiopia (Alem & Söderbom 2010:1) indicated *"households with low asset levels and casual workers were particularly adversely affected by high food prices".* A qualitative study results in Jimma town of Oromiya region on the impact of the rise in food prices on the urban poor suggests the link to food insecurity that resulted in high levels of stress, poor mental health and reduced physical health (Hadley et al. 2012). The study also suggested that the increase in food price has an impact on cultural practices such as undermining funerals and coffee ceremonies. In similar research on urban food insecurity in Addis Ababa in the context of high food prices Birhane et al. (2014:1) showed that *"household incomes and occupational and educational status of household heads were significant determinants of food security while a reduction in meal size and shifting to less expensive food types were among the common strategies to cope with high food price"*. Rapidly mounting food prices and the experience of food insecurity has impacts on the health and well-being of urban residents. Based on a primary survey of retail food outlets selling cereals, fruits and vegetables, and processed foods, Woldu et al. (2013:1) noted: *"high variation in quality and prices in the city and an increasing differentiation in food retail local markets of Addis Ababa"* calling for stimulating the emergence of a competitive private retail sector with targeted subsidies and safety nets for the poor.

Qualitative research in two communities, Berta Gibi and Gemechu Safar in Addis Ababa, Ethiopia (Tolossa 2010) using a sustainable livelihood framework found that the context shocks, assets, institutions, activities, and strategies interact in multiple ways to affect well-being and food security. The study also revealed that vulnerable households adopt survival strategies such as income diversification, dwelling in slum areas, and migration of household members. A study of household food insecurity and coping strategies among pensioners in

Jimma town, Ethiopia (Kisi et al. 2018:6) showed that *"food-insecure households used both consumption and asset-based coping strategies such as eating less preferred, lower quality or less expensive foods and receiving a donation from relatives or friends".*

Household structure and composition play a more significant role in providing livelihood security to the urban poor. The classical theory characterises urban households as nuclear families with weak kinship ties (Liang 2008; Puschmann & Solli 2014). Contrarily, a recent study by Gabrielli et al. (2018) argued that the interrelationship between modernisation and family structure in SSA is different. The study revealed that living arrangements in SSA follow original paths that are different for different ethnic and social groups. Tacoli (2012:14) also discussed one of the factors that *"lack of access to adequate shelter is a common problem for the poor"* leading to extended household structure. Renting space and sharing housing with non-relatives is not limited to migrants. According to Kumar (2010) and Rakodi (2010), a large proportion of residents of informal urban settlements in Africa, Asia, and Latin America rent houses from households as miserable as they are.

The significance of extended household structure has been given due attention in the United Nations expert group meeting that extended family was described as a long-established institution providing its members with the social security system supporting households to meet their basic needs for food, shelter, and clothing (Mokomane 2012). Concerning the extended household structure, careful observation of the results of the 1994 and 2007 national population and housing census of Ethiopia (CSA 1999; CSA 2007) the proportion of urban households with a nuclear family structure in major regions (Amhara, Oromiya, SNNPR, and Addis Ababa) has a decrease of about 3% between the two census periods (1994 and 2007) while urbanisation level at the time has increased from 14% to 16%. Contrary to the prediction of the dominant sociological theories that households would become more nuclear

with urbanisation and industrialisation (Puschmann & Solli 2014), the Ethiopian census result suggests otherwise.

2.5 Social Protection and Food Security

Ending poverty and hunger by 2030 is the primary commitment in the Sustainable Development Goals agreed by 193 signatory member states (UN 2015). Social protection is an important policy instrument in addressing the pressing global concern - ending poverty and hunger in developing countries. The literature review in this section provides an outline of the social protection concepts, approaches, and empirical evidence.

2.5.1 The Concept of Social Protection

Several international human rights instruments, such as the Universal Declaration of Human Rights, International Labour Organisation's Conventions on Social Security, Convention on the Rights of the Child, and Convention on the Rights of Persons with Disabilities have provisions supporting social protection. For instance, three specific articles (Article 22, Article 23, and Article 25) of the Universal Declaration of Human Rights (UN 1948), proclaimed by the United Nations General Assembly on December 10th 1948 applies to social protection. Article 22 states the right to social security and entitlement to realise through national effort as well as international co-operation. Article 23 also underscores protection of unemployment, the right to equal pay for equal work, right to just and favourable remuneration ensuring for the employee and his family an existence worthy of human dignity, and the right to form and to join trade unions for the protection of his interests. Article 25 stresses that everyone has the right to a standard of living adequate for the health and wellbeing of the employee and his family, including food, clothing, housing, medical care, and other necessary social services. It also addresses the right to security in the

event of unemployment, sickness, disability, widowhood, old age, or other lack of livelihood in the circumstances beyond his control.

Building upon the Universal Declaration of Human Rights (UDHR), Article 9 of the International Covenant on Economic, Social, and Cultural Rights (ICESCR), adopted in 1966 (UN 1966), recognises the right of everyone to social security, including social insurance. The International Labour Organisation (ILO) is the UN agency in charge of implementing the right to social security among the nations of the world as enacted in Article III (f) of the International Labour conference, 26th session (Cohen 1944). The Convention on the Rights of the Child (United Nations General Assembly 1989) Article 24-28specifically references the social welfare of the child. Article 24 entitlements of children to adequate health care, Article 24 treatment for mental health, Article 26 relates with social security; Article 27 referring to an adequate standard of living including nutrition, clothing, and housing; and Article 28 referring to primary education. Furthermore, Article 28 of the Convention on the Rights of Persons with Disabilities also recognises the right to an adequate standard of living and social protection (UN 2006).

Worldwide development organisations, such as International Labour Organisation (ILO), the Department for International Development (DFID), European Commission (EU), the World Bank and others theorise different frameworks to guide their interventions in fighting poverty as these development partners have diverse views about social protection. The World Bank links social protection to labour and jobs intending to help countries move from fragmented approaches to harmonising systems (World Bank 2011).

ILO is the other major international development partner supporting countries to develop and implement social security systems since its establishment in 1919 (ILO 2014). According to the ILO (2014), about three-fourths of the world's population continues to live without

adequate social protection coverage despite all the countries in the world are reported to have some kind of a social security system. In its conceptualisation, ILO views social protection as a human right focusing on employment, particularly the decent work agenda and extends rights to both the formally employed and workers in the informal sector (ILO 2012). ILO (2014) illustrates the impact of social protection that only countries with adequate social protection systems were able to respond more quickly and effectively to the global crisis since the economic crisis in 2008. The European Commission views social protection as helping to reduce poverty and vulnerability and supporting inclusive and sustainable development (EU 2012). The UK government, DFID, defines social protection as a mechanism to help address risk, vulnerability, and chronic poverty (Arnold et al. 2011). DFID is supportive of the move from fragmented social protection programmes to comprehensive systems, as does the World Bank.

Several frameworks provide analysis of social protection objectives and impacts that are conceptualised in different ways. The most commonly used conceptual framework describes the four pillars of social protection that include: protective - strengthen household assets; preventive - enable households to manage risks better; promotive - provide direct interventions supporting human capital development and food production; and transformative - bolster local economies, social equity, inclusion, and empowerment and rights (Devereux & Sabates-Wheeler 2004; Huijbregts et al. 2018). While ILO theorised the first three components (commonly called as the three Ps), the addition of transformative component here viewed the transformation of lives beyond the traditional social protection. It focused on alleviating poverty through the adoption of policies to address unequal power relations that cause vulnerabilities. The transformative element of the framework argues against the welfare approach to social protection, which is set to advance social protection to achieve more than economic security.

The broad classifications of social protection schemes include social assistance, social insurance, labour market interventions, and traditional or informal social protection (Browne 2015). Social assistance also referred to as “social assistance” or “social transfers” are non-contributory transfers designed to provide direct, regular, and predictable cash or in-kind resources transfers to poor and vulnerable individuals or households (Arnold et al. 2011, Gentilini et al. 2014). This is the primary form of social protection available in most developing countries is the once targeted based on categories of vulnerability and are targeted broadly to low-income groups (Barrientos 2010). The commonly used components of social assistance include cash transfers, social pensions, in-kind transfers, school feeding, and public works programmes. Cash transfers are direct, regular, and predictable transfers that raise and smooth incomes to reduce poverty and vulnerability (Arnold et al. 2011). In-kind transfers are economical and livelihood asset transfers to households, facilitating income generation, which in most cases is linked with skills training and other activities (Holmes & Jones 2010). School feeding is a type of in-kind assistance with a free meal at school aimed at encouraging parents to keep children in school (Norton et al. 2001). Public works programmes are a kind of social assistance to provide jobs on infrastructure projects for cash or food with the aim of poverty alleviation, job creation, or social protection. Social pensions are the most common social protection tool in the form of cash transfer targeted by age. Social insurance is a contributory scheme where participants make regular payments and the scheme provider to cover expenses related to life-course events such as unemployment or illness (Barrientos 2010) matches costs. Labour market interventions are also the other social assistance component aimed at helping the unemployed and the most vulnerable individuals find jobs, training, and draft policies to promote small and medium-sized enterprises that protect poor people who can work (Barrientos 2010). In situations where the formal social protection mechanisms do not offer all-embracing coverage and exclude parts of the

population, traditional community-based forms of social protection fill the gaps left by formal interventions (Norton et al. 2001). Consequently, formal social protection programs need to be sensibly managed to augment the existing informal systems (Harvey et al. 2007).

Social protection is a primary concern in development policy and practices globally, and Ethiopia is not an exception. Ethiopia's constitution (Article 90/1) states: "*To the extent the country's resource permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security".* In line with this, Ethiopia's National Social Protection Policy comprises five focus areas which are: *"promote productive safety nets; promote employment opportunities and improve livelihoods; promote social insurance; increase access to health, education and other social services; and address violence, abuse and exploitation and providing legal protection and support"* (Ministry of Labour and Social Affairs 2014:2). Social protection scheme in Ethiopia follows the classification encompassing three components that are also used in the other developing world Fiszbein et al. (2014). These include " i) social insurance - contributory schemes that protect against shocks to health or employment; ii) labour market interventions - such as job training; and iii) social safety nets - which include targeted non-contributory interventions such as cash and in-kind transfers, labour-intensive public works, and humanitarian assistance" (Fiszbein et al. 2014:108). The Social Protection Policy of Ethiopia also recognizes informal social support systems that include a wide range of support mechanisms within the extended family structure and other social institutions as a basis of the social protection system in the country.

Micro and Small Enterprise (MSE) development strategy is described in the National Social Protection Policy of the Government of the Federal Democratic Republic of Ethiopia (2014) as an essential vehicle to address the challenges of an unemployed segment of the population

through the creation of small and micro-businesses. MSEs in Ethiopia is set up with the goal of poverty alleviation. The poverty reduction strategy (National Planning Commission 2016) provided a framework through the promotion of micro and small enterprise along with improved access to credit and other necessary technical support in the form of technology, training, and information aiming at reducing economic risks and vulnerabilities. Microfinance institutions are at the core of realizing this goal of addressing household livelihood (improving access to food). Ethiopians also have a widely practised a traditional means of saving called *Equib* that exists outside the formal financial system (Bekerie 2003). *Equib* is a voluntarily assembled group of people and makes a mandatory contribution on a weekly or monthly basis. *Equib* provides funding to the members, particularly poor people, on a rotational basis with a flexible procedure that helps to improve the livelihoods (Mammo 1999).

Ethiopia has set several components of social protection aiming at reducing social and economic risks, vulnerabilities and deprivations for its people and to facilitate equitable growth (Ministry of Labour and Social Affairs 2014). The components of Ethiopian social protection landscape, relevant to the study of urban food security, include the formal social protection systems such as Social Insurance Programme (SIP); Food Security Programme (FSP), which include the Productive Safety Net Programme (PSNP), and Household Asset Building Programme (HABP) and National Nutrition Programme (NNP).

2.5.2 The Role of Social Protection on Food Security

The previous section has presented the review of conceptual approaches of social protection in different development agencies devised with the primary aim of reducing poverty and vulnerability. This section deals with empirical review and analysis of literature related to the impact of the different components of social protection programs in addressing food security

from across the developing nations in Africa, Latin America, and Asia and pays attention to review studies specific to the Ethiopian context.

The World Social Protection Report 2017-19 (ILO 2017:7) showed that "only 29% of the global population enjoys access to comprehensive social security systems (that includes the full range of benefits), while the remaining large portion (79%) have partial coverage or not protected at all". However, considering the coverage for at least one package of the social protection benefits, it has reached 45% of the global population. Underinvestment in social protection remains significant in Africa, Asia and the Arab States. The empirical result in the 2017 ILO report shows that the social protection system is yet far from fulfilling the fundamental human right to social security of most of the world's population. Another report (FAO et al. 2015) that came at the beginning of the SDGs has also specifically indicated the need for state's commitment to social protection to change livelihoods and to improve access to food to attain the goal for ending the world hunger at the end of 2030.

There is evidence that the social safety net component of social protection system can have significant positive impacts on food security. A global report (Gentilini et al. 2014) in this regard provides estimates of coverage of social safety net programmes based on a review of 475 programs in 146 developing countries. The study estimated that over 1 billion people in developing countries participate in at least one of the social safety net programs. Hidrobo et al. (2018) also conducted a comprehensive meta-analysis of studies from all the developing regions that assessed the impacts of social protection programs (cash transfers, public works, and food transfers) on food security outcomes and asset formation since 1994. The study showed that social protection programs lead to increased asset holdings and that "social protection programs improve both the quantity and quality of food consumed by beneficiaries" (Hidrobo et al. 2018:101).

Huijbregts et al. (2018) conducted a case study on Ethiopia, the Gambia, Mozambique, Kenya and Zambia on the current and potential linkages between social protection policies and programmes and food and nutrition security. The study has shown Ethiopia and Mozambique increasingly tailored to moving from a protective and preventive approach to a more transformative social protection approach such as skill development, livelihood diversification and micro-finance activities which rely on collaborations of different sectors.

Ethiopia has an encouraging record of achievement in rural productive safety net programme (Coll-Black 2015, Dube & Ozkan 2018). Although there are positive achievements in rural areas, urban poverty and the associated food insecurity in Ethiopia remains to be a key challenge ahead. Due to the complexity of urban poverty in the era of a high rate of urbanisation in the developing world and the urban areas infested with poverty, Gentilini (2015) suggested the safety net programs consider fundamentally different sets of opportunities and challenges for social protection to succeed. Crush & Frayne (2011) in their report of the study on urban food insecurity and the new international food security agenda also argued the global bias towards the supply side and emphasised the complexities of urban food systems suggesting being focussed by researchers, policymakers, and international donors and multilateral agencies. A study on the welfare implications of rising commodity prices in Ethiopia (Shimeles and Woldemichael 2013) shown that a rise in prices of cereals (a staple food in most urban areas) leads to deterioration in the welfare of households in urban areas.

To address this concern, Ethiopia has recently received a significant grant from the international community to finance its flagship Urban Productive Safety Net Programme (UPSNP). Among which, the approval of US$300 million by the World Bank Groups Board of Executive Directors on December 16, 2015 (World Bank 2015) is the major one. The

funds are to be used to reduce poverty and vulnerability among the urban poor living below the poverty line. The project has replaced humanitarian relief with sustainable, predictable support for households in perpetually food-insecure areas. In a World Bank press release, no: 2015/235/AFR on December 16, 2015, the World Bank task team leader for the project Muderis Abdulahi mentioned in his message that: *"The project will help provide predictable safety nets and livelihood services for the poorest urbanites and facilitate capacity building taking into account the complex nature of urban poverty and adapting to changing circumstances"* (World Bank 2015). According to the press release:

> *Urban Productive Safety Net Programme (UPSNP) intended to help 604,000 beneficiaries (that account about 55% of urban dwellers below the poverty line in 11 major cities (Addis Ababa, Adama, Assayita, Asosa, Dessie, Dire Dawa, Gambella, Hawassa, Harari, Jijiga, and Mekele). The project includes interventions to meet the diverse needs of beneficiaries. Able-bodied persons from eligible households will have the opportunity to participate in public works and receive safety-net payments. The project will also help them gain basic financial literacy and other business skills, as well as various livelihood services, which they can use to gain their financial independence. For those who are unable to participate in the public works program, including the elderly, people with disabilities, street children, the homeless, and panhandlers, the project will deliver unconditional cash transfers as well as additional services* (World Bank 2015).

Endale et al. (2019:26) illustrate the two primary components of the UPSNP programme. The first component is cash transfer for able-bodied persons in exchange for their participation in public works programmes, which accounts for 84 per cent of the total beneficiaries (a

component overseen by the MoUDH). The second component of the programme is unconditional cash transfers to those unable to work, which accounts for 16 per cent of the total beneficiaries (a component of UPSNP managed by MoLSA).

According to the National Social Protection Policy of Ethiopia micro and small enterprise development strategy is a vehicle for improving the livelihoods of the poor. The poverty reduction strategy of Ethiopia also provides a framework for the promotion of micro and small enterprise along with improved access to credit and other necessary technical support aiming at reducing economic risks and vulnerabilities. A study that looked at whether microfinance is an effective strategy for poverty reduction Addae-Korankye (2012) demonstrated microfinance as a useful tool for poverty reduction in developing countries with a positive contribution to enhancing food access. Masanga et al. (2017) in a study of the significance of microfinance to urban informal traders in Zimbabwe has also established the significance of microfinance to informal traders that without such a service it would have been hard for the informal traders to trade, acquire assets, purchase essential consumptive items and send their children to school. Ngala et al. (2017) similarly showed that vulnerable households in Kakamega County in Kenya with access to microfinance had improved their access to and adopted less severe coping strategies.

Similarly, a study on the Performance of Microfinance Institutions in Ethiopia (Wassie et al. 2019) using a panel data (2000–2017) has shown microfinance institutions in Ethiopia have a better performance as compared with ten of the biggest economies in SSA. However, not all studies show a favourable report of the significance of microfinance institutions in addressing food insecurity. A systematic review of the evidence on the impact of microfinance in SSA (Van Rooyen et al. 2012) suggested that microfinance despite being useful to the livelihoods of the poor it does also harm when not managed properly. Several studies in Ethiopia criticize

microfinance institutions that they are mostly out of the reach of the poor since credit is limited to those who own residential houses for collateral purpose and earnings (Tarekegn & Molla 2018; Tadesse 2014; Tarozzi et al. 2015).

The literature agrees that social protection has significant developmental effects on livelihood improvement and food security, but that it is not free of limitations. Tiwari et al. (2016) explored the extent to which government-run cash transfer programs in four SSA countries (Ghana, Kenya, Lesotho, and Zambia) affected food security and nutritional outcomes. The result of the cross-country analysis revealed that while a relatively generous, regular, and predictable transfer (long-term safety nets) increased the quantity and quality of food and reduced the prevalence of food insecurity a smaller, lumpy and irregular transfer, primarily relief programs in response to emergencies, did not lead to an impact on food expenditures. The assessment of the impact of PSNP in Ethiopia with the application of propensity score matching techniques Gilligan et al. (2009) has shown similar result that despite being the most extensive social protection programme in SSA, it had little impact on participants on average due in part to transfer levels that fell far below programme targets. Dercon (2011:1) has also similarly argued that "social transfers have substantial poverty and equity impacts while their efficiency and growth impact is unlikely to be high since the main motivation for social transfers lies in their equity or poverty impacts".

The informal social network is an essential institution in the provision of social protection in traditional societies (Walther and Renk2017; Kelemu et al. 2017). However, this social network is under stress because of urbanisation that "makes the development of sustained, predictable formal social protection mechanisms critical" (Oduro 2010:21). As formal social protection programmes are further developed and expanded, Oduro suggested the need for research to be undertaken to understand the effect the formal social protection is having on

the informal social protection arrangements to inform the design of the subsequent formal social protection interventions in African countries. The following section presents a review of literature related to one of the essential components of the informal social protection, linkage of urban households with their rural kin structure in rural areas.

2.6 Urban-Rural Linkage and Food Security

Interventions that build and support the transformation of urban-rural linkage including physical, economic, social, and political connections as the world continues to urbanize is crucial for substantially ending hunger and malnutrition in both rural and urban areas (Graziano & Fan 2017). Rural-urban linkages refer to a flow of goods, people, information, finance, information, and social relations across space, linking rural and urban areas (Tacoli 2015). Urban-rural social linkages can also be understood as a link between sectors (agriculture, industry and services), which is central to the structural changes taking place in both rural and urban areas (Lesetedi 2003).

Contrary to the predominant focus of the literature on rural-urban linkages in SSA is on the urban dwellers contributing to the livelihood of the rural families through remittances, several studies in Africa showed the significance of the relationship between food security and urban-rural social linkage. With rising urban poverty across most of Africa, the strengthening and adaptation of urban-rural social linkages represent vital safety valves and welfare options for urban people who are vulnerable to economic fluctuations (Hussein & Suttie 2016; O'Connor, 1991). Hussein & Suttie (2016) also provided a discussion on the research over the past several years and showed the roles that small and medium-sized towns play in fostering dynamic rural-urban linkages in Africa through food systems. Krüger (1998:119) for instance, described the "importance of rural-urban links for many of the households of Botswana's cities own cattle and retain land in the village from which they come, and these

rural assets were valued both in economic and social terms serving as a valuable safety net for households with low incomes and uncertain livelihood prospects". One significant link in this regard is access to rural land that it serves for achieving urban food security (Pottier 2015). Research in Nakuru town, Kenya, Owuor (2007) also revealed that the urban-rural linkage is becoming an essential element of the livelihood strategies of poor urban households. Similarly, research in the southern African region on urban survival strategies in Windhoek, Namibia (Frayne 2004) showed the central role of social linkages between rural and urban households enabling the survival of poor urban households. The study has also shown that the most vulnerable urban households were those that have limited social connections to the rural areas relying on intra-urban opportunities to get food (including borrowing, begging, piecework and crime).

A study on the nature and extent of urban-rural social linkages in Gaborone, Botswana (Lesetedi 2003) found that urban-rural linkage provides vital safety valves and welfare options for poor urban households. Most the households maintained strong social links with rural kin through the exchange of money, goods and visits, owned property in their rural villages and were involved in various types of economic and social activities including funerals, weddings, and in civic activities. Likewise, Crush (2017) suggested the prominence for transforming rural-urban linkages and its implications for food security of rural and urban residents, using case studies from Zimbabwe and Namibia. The study demonstrated a substantial impact on urban food security that the linkage revealed urban-rural bidirectional flows of goods (including food) beyond cash-based market transactions. The study also suggested lessons related to food remitting to be applied in other African contexts for programming and research.

Tumaini and Msuya (2017) conducted a study on coping strategies and resilience to food insecurity in the urban-rural continuum of Morogoro and Iringa towns in Tanzania that revealed food access insecurity coping strategies vary significantly among households located in urban, peri-urban, and rural settings. Also, based on research carried out in the low-income residential area of Harare, Zimbabwe (Tawodzera 2013) assessed the "contribution of rural-urban linkages to the food security of urban households in a crisis context". The research findings demonstrated that in conditions of extreme economic distress, the socio-cultural linkages that existed between the city and the village was crucial to the survival of distressed urban households. In a similar account, an article investigating the survival strategies of the urban poor in Lagos metropolis revealed the "importance of informal social networks especially rotating credit and ethnic alliances as social security and insurance mechanisms" (Lawanson & Oduwaye 2014:139)

Vaitla (2012) showed a strong linkage of the welfare of urban households and that of their rural relatives, which is a common characteristic in the developing world where internal migration is common. Furthermore, Flanagan (2010) illustrated the significance of the organisation of the informal economy and all forms of social networks of communities in the poor urban neighbourhoods to offer members with a pool of resources for a minimum subsistence. The social network has more significance for coping strategies to aid the wellbeing of its network members especially for female-headed householders as indicated by a study of the urban slum (Gedam Sefer) of Addis Ababa (Kebede & Butterfield 2009). The contempt to the significance of the urban-rural link is noticed from the national report on housing and sustainable urban development of the Ministry of Urban Development, Housing, and Construction (MoUDHC).

> *Urban-rural social linkages in Ethiopia have been characteristically weak as different forms of linkages: market, finance, physical (spatial) and public services were poor and undeveloped. Market linkages are constrained due to the lack of adequate transport, market facilities, market information, and institutional constraints.* (MoUDHC2014:12).

The report sympathetically listed the formal and structural aspects of the linkage meant for enhanced rural-urban linkages such as "the liberalization policy related to input and output marketing facilitates; the involvement of the private sector; the promotion of agro-processing industries and micro-enterprises; and the development of small-sized towns and rural service centres" (MoUDHC 2014:12). Despite being essential for household and individual level livelihood risk management, the informal component of urban-rural linkage was not emphasised in the report.

Different studies, however, devoted to explaining the significance of urban-rural linkage to the nation's development in the era of rapid urbanisation. Pronouncing a low degree of urbanisation and weaker rural-urban linkage, a study by Adugna and Hailemariam (2011) showed that urban-rural social linkages in Ethiopia yet plays a significant role to ensure the survival and development of both urban centres and rural livelihoods. The study emphasised the significance of the informal sector, providing the foundation upon which the rural-urban linkage is built by way of providing jobs to the migrants and generating a significant proportion of urban incomes. Similarly, Gebre-Egziabher (2005) discussed structural factors such as process and pattern of urbanisation, lack of balanced rural-urban development policy, land tenure policy, and lack of entrepreneurial outreach to farming and agriculture as the major factors responsible for underlying weak rural-urban linkages in Ethiopia.

In one of the Ethiopia strategy support programs, working papers on the implications of land policies for rural-urban linkages and rural transformation (Zewdu & Malek 2010) explored the policy environment related to rural-urban linkages and migration in Ethiopia. They analysed how the policies are impacting rural transformation. The analysis was rural-focused and considered the rural-urban linkages as a stepping-stone toward rural transformation leading to industrial growth. A more balanced outlook on urban-rural linkage was emphasised in Douglass (1998) refereeing to the case in Indonesia, argues viewing rural and urban development as being interdependent and advocates the organisation of planning around regional networks of rural and urban linkages.

Access to rural land stood at the centre of urban-rural linkage. The urban-rural linkage of households in Ethiopia has generally been weaker after the 1974/75 revolution, the time a military junta (*Derg*) controlled the power by ousting the emperor from his throne. The Derg immediately passed a proclamation (The Provisional Military Administration Council of Ethiopia 1975) that nationalized all rural land and transferred the same to state ownership. The land reform cut the provisions that had favourable implication for urban-rural linkage. The Constitution of the Federal Democratic Republic of Ethiopia that came out in 1995 after the downfall of the *Derg* in May 1991 (Proclamation No. 1/1995) also decided to continue keeping rural land under public ownership. The constitutional provision was later translated into federal and regional state laws with substantial variation in the content and application of the law.

However, the shortcomings in the land policy of Ethiopia, which differs from one regional state to the other, seem to have played a negative role in weakening urban-rural linkage at a household level. For instance, the Revised Rural Land Administration and Use Determination Proclamation (Proclamation No.252/2017) of Amhara National Regional State (2017) and the

Rural Land Usage Proclamation (Proclamation No. 23/1997) of Tigray National Regional State (1997) are restrictive land laws (Ghebru & Holden 2013). The law in these regions allows inheritance and transfer of land rights only if the child is dependent on his father's farm and that the child is not self-subsistent outside the agriculture sector. In case of Southern Nations, Nationalities and Peoples Regional State (SNNPR 2007) and Oromiya regional states (Oromia National Regional State, 2007), however, the right holder can transfer rural land use right through inheritance to members of his family irrespective of their wealth, or current place of residence. The land laws in Amhara and Tigray regions are presumed not only to weaken rural-urban linkage of households but also impede diversification of livelihood for both the urban dwellers and rural farming households.

The significance of urban-rural linkage for mutual growth and development of both urban and rural development in Ethiopia can be well represented by the social structure of the Gurage community in Ethiopia. Baker (1992) described how a relatively small, but economically more influential ethnic group, the Gurage of Ethiopia has come to assume a dominant position as small and medium-sized entrepreneurs and traders in urban centres of Ethiopia. Baker has shown that the maintenance and development of urban-rural networks have enabled them to maximize their economic opportunities. The emotional attachment of the urban Gurage to their rural origins and farms is reinforced by the Gurage attitude that *'a person who does not maintain his farm is considered as rootless even though he is well-established in the city'.* In this economic analysis, consideration for maintaining rural land is significant as urban Gurage with rural land always has recourse to his farm in the event of business failure or long-term unemployment (Fecadu 1970, as cited in Baker 1992).

2.7 Theoretical and Conceptual Framework of the Study

This section of the study presents the consulted theories, and the conceptual framework is drawn based on the reviewed literature. The conceptual framework includes a philosophical and methodological model drawn considering the problem and objectives of the study and used to guide the research design, analysis, and interpretation of results.

2.7.1 Theoretical Framework

Relevant theories related to the study subject were consulted to frame the demographic, economic, socio-cultural, and psychological contexts of the study of urban food insecurity. A choice of integrating relevant theoretical approaches was made to cast this research work. The study is framed by the integration of Amartya Sen's theory of Entitlement (Sen 1981), Sen's Capabilities Approach (Sen 1993), and Double ABCX Model of Family Stress Adaptation (McCubbin, Olson & Patterson 1983). The Sustainable Livelihoods (SL) framework has been one of the most commonly recurring general approaches popular among practitioners and consulted in this review. Because of its flexibility in dealing with development and poverty, SL has been adopted by development organisations, governmental agencies, and UN agencies that they have developed their version of the framework, and there are now several different SL frameworks depending on the specific nature of the organisations. However, SL is used less frequently in the academic world, and its focus is mainly on rural development and poverty.

Amartya Sen's Theory of Entitlement and Capabilities Approach

According to Sen (1981), famine or the extreme form of food insecurity occurs when many people in a region lose their entitlements to access commodities. Amartya Sen's entitlement approach shifted the focus from food availability to people's access to food. In keeping with

Sen's argument entitlements depend on the household's capacity to grow own food (production-based entitlement), ability to buy own food (trade-based entitlement), access to employment (own-labour entitlement) and access to social security programmes. According to Sen, entitlements depend on two fundamental pillars - personal endowments (tangible and non-tangible resources a person legally owns) and the set of commodities a person has access to through trade and production (Sen, 1981: 435). Amartya Sen's entitlement theories provide a framework for evaluating the responsiveness of a given system of social protection and employment opportunities in providing exchange entitlement adequate to avoid malnourishment.

The capability approach (Sen 1993) also has contributed to the theoretical framework of the current study as it views capability as a combination of various issues in improving the quality of life. In the context of social analysis, such as dealing with extreme poverty in developing economies, Sen stressed the need to deal with a small number of centrally important functioning and the corresponding minimum capabilities. As it is described in his theory, identifying a minimum combination of essential capabilities can be the right way of setting up the problem of diagnosing and measuring poverty. These minimum capabilities may include the ability to be food secure (achieving minimum calorie intake), being sheltered, and obtaining essential health and education services. Clark (2005:1339) described Sen's capability approach that *"it provides a better framework for thinking about human well-being and development than more traditional approaches which typically focus on utility or resources".* Amartya Sen emphasized the importance of capabilities as against the prominence of the theory of economic growth as an indicator of the quality of life. Gender inequalities have also been an essential theme in Sen's capability analysis that the central goals of his theories revolve around deprivation of females and the achievement of gender justice in societies (Nussbaum 2009). Sen's work in the 80s and 90s insisted on the

importance of capabilities in contrast to the dominant emphasis on economic growth as an indicator of the quality of life in a given nation. The theory of entitlement has its application to the analysis of poverty and the aspect of economic deprivation in general. For example, the gender dimension of capability helps to observe the participation of female in education critically, paid work, decision making, and the likes in the course of their life as they change from childhood to adulthood and according to their marital status. Applying Sen's theory the economic position of females depend on what they can own and use, their exchange possibilities, transfer of resources to them and what is taken away from them (Tisdell et al. 1999).

Both the entitlement and capability theories are influential in supplying the conceptual tools to allocate adequate resources for measuring household level minimum capabilities to cope with vulnerabilities. However, the theories do not adequately explain household behaviour in coping within a crisis. This study employs the Double ABCX Model of Family Stress Adaptation to compensate for this gap.

The Double ABCX Model of Family Stress Adaptation

The Double ABCX model of family stress and adaptation (McCubbin, Olson & Patterson 1983) is built on Hill's ABCX model of family stress and crisis to address post-crisis. Greder (2000) provides a workable description of the model *"the Double ABCX model describes life stressors and changes, which may influence the family's ability to achieve adaptation, the critical psychological and social factors families call upon and use in managing crises and the outcome of these family efforts"* Greder (2000:90). According to Greder (2000), households are characterized by anxieties and potentials. The level of stress changes as a result of transitions from one situation to the other (such as from food secure to food insecure) across time, which calls for adjustments. The model implies that in crises (such as food insecurity), the

household struggles to maintain the household functioning through the application of adaptation (coping) efforts. In this research, Sen's theory of entitlement and capability is combined with the Double ABCX model of family stress and adaptation to measure coping with food access insecurity (Objective 2-5 of the study).

2.7.2 Conceptual Framework

The conceptual framework of the study, Figure 1 is outlined to investigate the factors that determine how households cope with food access insecurity. In developing the framework of this study, the researcher presupposes dissimilarity in the level of food insecurity as well as the stress in coping with food access insecurity across the internal and external household factors.

An investigation of the relationship between household-level characteristics and external factors of coping in this conceptual framework is indicated with a solid direct arrow. The broken line arrow indicates relationships that are presumed to exist but not dealt with in this study. Coping with food access insecurity differs according to the particular context in which households are living. According to Guyer and Peters (1987), the household definition includes broader span involving participation in production, reproduction and consumption. The term household in this study, however, followed the definition given by the UN (2017) that it refers to a group of persons who make regular provision of food, shelter and other essentials for living.

The household structure and composition included in the model are age, sex, and education of the household head, household size and ratio of young children. These are internal factors pertinent to the analysis of coping with food access insecurity. The impact of these factors is illustrated widely in the literature across the developing world (Adeyefa 2016; Gershuny&

Sullivan 2014; Maitra & Rao 2015; Niankara 2018; Olayemi 2012; Osumanu et al. 2015; Tabrizi et al. 2018) and these factors are likely to affect the level of coping.

An informal social network is an essential institution in the provision of social protection in traditional societies (Walther & Renk 2017; Kelemu et al. 2017). A factor much less studied in Ethiopian context concerns the urban-rural linkage of households which mediate resource flows, often essential to household livelihood. The extent to which the household can access transfers during the crisis under the kinship structure is of particular interest in this study.

The other factor in the conceptual model is household economic resources such as asset ownership and household income sources that have been shown to have a strong correlation with resilience and successful coping (Amendah et al. 2014; Devereux 1993; Fernanda et al. 2016).

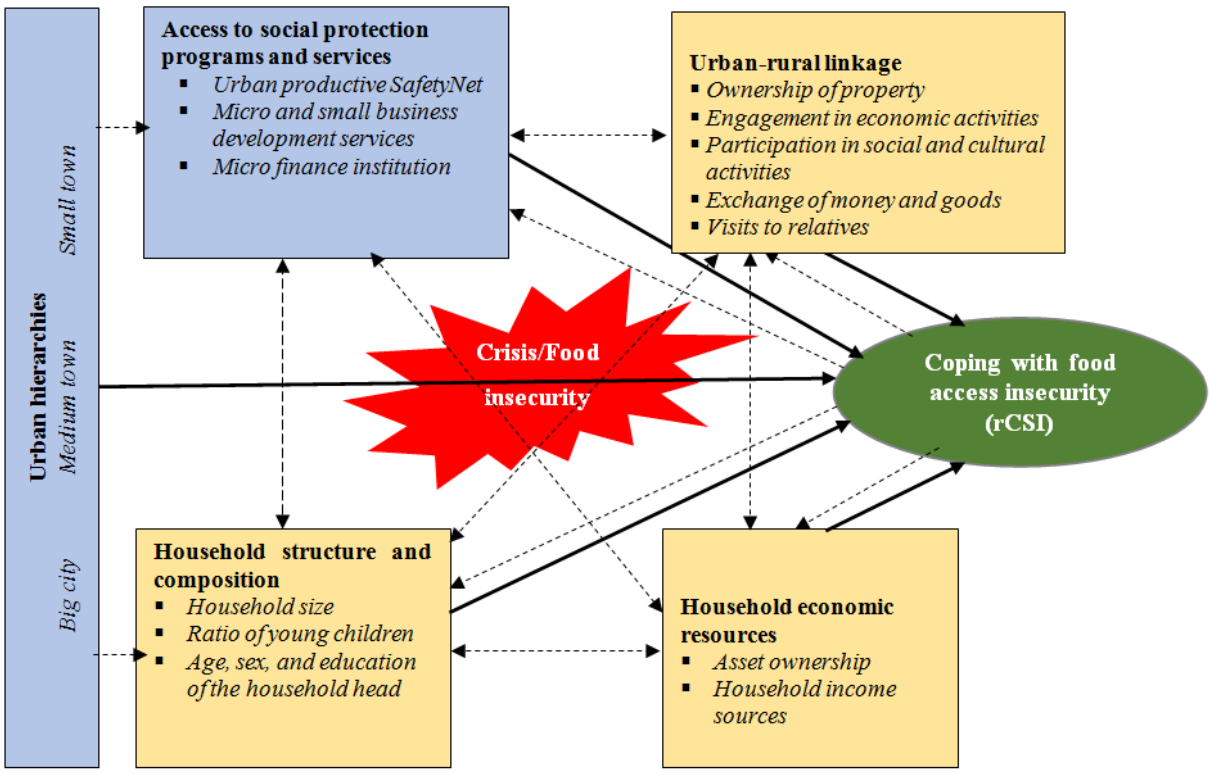


Figure 1: Conceptual framework of coping with food access insecurity developed by the author (based on reviewed literature)

External factors include the natural environment that households are living in, such as the urban hierarchies (small, medium, and big cities) as well as policies and systems of social protection programs that households have access. Several international human rights instruments, such as the Universal Declaration of Human Rights (UN 1948), International Covenant on Economic, Social, and Cultural Rights (UN 1966), Convention on the Rights of the Child (UN 1989), and Convention on the Rights of Persons with Disabilities (UN 2006) have provisions advancing social protection. The most commonly used conceptual framework describes the four pillars of social protection that include strengthening household assets, enabling households to manage risks better; providing direct interventions supporting human capital development and food production; and bolstering local economies, social equity, inclusion, and empowerment and rights (Devereux & Sabates-Wheeler 2004; Huijbregts et al. 2018). There is ample evidence that the social safety net component of social protection system can have significant positive impacts on food security (Gentilini et al. 2014; Hidrobo et al. 2018; Huijbregts et al. 2018). Safety net programme in Ethiopia has been widely practised for decades and has encouraging record of achievement in rural areas (Coll-Black 2015, Dube & Ozkan 2018), and the country has recently introduced safety net programme to the major urban centres. Besides the safety net programs, the National Social Protection Policy (2014) and the Poverty Reduction Strategy (National Planning Commission 2016) of Ethiopia regards micro and small enterprise development strategy as an essential vehicle to address poverty and the associated food insecurity. Studies (Van Rooyen et al. 2012; Wassie et al. 2019) have also shown the significance of microfinance institutions in addressing food insecurity.

2.8 Conclusion

In this chapter, literature that relates to the different aspects of the issues related to urban food security research was reviewed. This chapter summarised the conceptual definition of food security and its modification since the issue of food security was placed on the global agenda. Coping with food insecurity, being a response to the food insecurity related stress was also discussed as it varies depending on the available resource households have such as social, economic, and demographic. The reviewed literature included the widely used food security measures and their applications in food security research based on which the researcher identified calorie intake, food consumption score, coping strategies index, and household food insecurity access scale relevant to show food insecurity situation in the current research.

The reviewed literature showed that food insecurity is a global phenomenon. The latest evidence on the prevalence of undernourishment showed no significant change at a global level since the launching of the SDGs. The absolute number of people suffering from hunger, however, continued to increase. Regionally, undernourishment is the highest in SSA, followed by the Caribbean. The current level of food insecurity is disturbing as it challenges the global target of states aiming to achieve the Zero Hunger by 2030. East Africa has the highest prevalence of undernourished population than any region in the developing world, near to one-third of the population (30.8%) in this region is undernourished, and the trend since 2010 shows no change. Ethiopia's economy has experienced robust growth, which is significantly high as compared to the regional average and calorie intake per person per day has generally revealed an increasing trend for the country during the past decades. However, the progress made in calorie intake is not equitably distributed across all social groups; the calorie intake in urban areas remained consistently lower as compared to rural areas. Several kinds of research were reviewed to explore the multidimensional impact of food insecurity,

including the association between food insecurity and health outcomes, childhood stunting, education outcome, and labour engagement.

Literature was reviewed to provide an overview of the levels and trends in urbanisation globally and across the geographic regions and to portray the urban nature of food insecurity. According to the reviewed literature, two-third of the world population in the developing regions will be living in urban areas by 2050. Literature has also shown that along with a higher rate of urbanisation across Africa and Asia resulted in the growth of slum and informal settlement with a continued rise in urban poverty urban share of poverty. More than half of the urban population in SSA and nearly three-fourth of the urban population in Ethiopia live in slum areas. The rate at which SSA is urbanizing is not followed by economic growth to sustain the lives of its inhabitants. The review has also provided methodological ground that hierarchical relationship among cities and potentials of small and medium-sized towns across the continuum of urban hierarchies having significance that is more considerable in studies involving socio-economic disparities. The literature has shown the level of attention to the phenomenon of food insecurity in the context of the rapid urbanisation across the developing regions mainly due to reliance of urban households on market purchases for their food, and that food purchases account for the more significant share of their household expenditure.

The literature review discussed several factors of food insecurity in the developing nations including different sub-regions of Africa, Asia, and Latin America focusing on the role of demographic, social, and economic factors in determining food security. The reviewed literature showed household characteristics as a useful factor in the analysis of household food security. Several of the literature established the association of food insecurity and socio-demographic variables that household size, a ratio of dependents, as well as gender, marital status, employment status, age, and educational level of the head of the household

were significant predictors of food insecurity. A rise in food price also affects the vulnerability of urban households.

Furthermore, the literature review substantiated with empirical evidence provided a framework of social protection in addressing food insecurity. This chapter presented several international human rights instruments related to social protection and entitlement and review of different frameworks entertaining diverse views of the international development organisations in guiding their interventions in fighting poverty. The review has also identified an informal social network as an essential institution in the provision of social protection in traditional societies. Several of these frameworks provide analysis of protective, preventive, promotive, and transformative nature of social protection objectives. Nevertheless, the social protection system is far from fulfilling the fundamental human right to social security of most of the world's population that only less than one-third of the global population has access to comprehensive social security systems. The literature also has shown that social protection has significant developmental effects on livelihood improvement and food security. In this regard, Ethiopia has tailored to moving from a protective and preventive approach to a more transformative social protection approach such as skill development, livelihood diversification and micro-finance activities that rely on collaborations of different sectors.

Besides, a review of the extant literature has shown the significance of urban-rural linkage to address hunger and malnutrition substantially in urban areas as the world continues to urbanize. With rising urban poverty across most African countries, the strengthening and adaptation of urban-rural linkages through access to rural land, exchange of goods and services, partaking in funeral or weddings, and the likes represent vital safety valves and an essential element of the livelihood strategies for the urban poor households. Finally, theoretical frameworks that provide a basis for understanding food insecurity situation and

mechanisms how urban households strive to cope with food access insecurity were reviewed. Several theories were consulted to frame demographic, economic, socio-cultural, and psychological contexts of food insecurity. The conceptual framework of the study was developed based on theories and the reviewed literature to investigate the factors that determine how food insecure urban households cope with food access insecurity.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The purpose of this chapter is to explain the methodology followed when conducting the study. The study design involves both primary and secondary data sources with the application of household survey supplemented by focus group discussion. This chapter presents an overview of the features of the study sites, description of the study population, the assumptions and estimation of the sample size, and procedures applied for the selection of the study households. This chapter also explains the discussion of structure and content of instruments used for data collection and an illustration of their validity and reliability. This chapter also covers ethical considerations during the fieldwork, detailed materials of the analysis, and evaluation of the assumptions in the regression models. Finally, limitations of the study are highlighted to enable the reader to contextualise the study within its scope.

3.1 Research Design

This research was principally aimed at investigating the social, economic and demographic factors in coping with food insecurity among households in urban slum areas of Ethiopia. As it is suggested by Edmonds and Kennedy (2017), the study used multiple methodological strategies to increase the depth and breadth of the research. Accordingly, assessment of the food security situation in Ethiopia across time (specific objective 1) was based on an in-depth descriptive analysis of secondary data for fifteen years from the national surveys of household consumption and welfare monitoring (2004/5, 2010/11, and 2015/16). Whereas, the remaining four of the specific objectives of the research (specific objectives 2-5) were addressed through correlational study employing a multi-disciplinary approach of investigating factors of coping with food insecurity involving several academic disciplines

such as economics, sociology, demography, and public policy based on a primary household survey data.

The sampling design of the household survey used a combination of both purposive and probability sampling methods. The sampling was purposive in that three urban centres were selected based on considerable thought, primarily focused on the representation of the urban hierarchies (small, medium and big city) to reflect various dimensions of difference relevant to poverty. Specific households for the research were, however, selected by applying a random sampling method. While the household samples may not be nationally representative, they are representative of the slum communities from which they were selected.

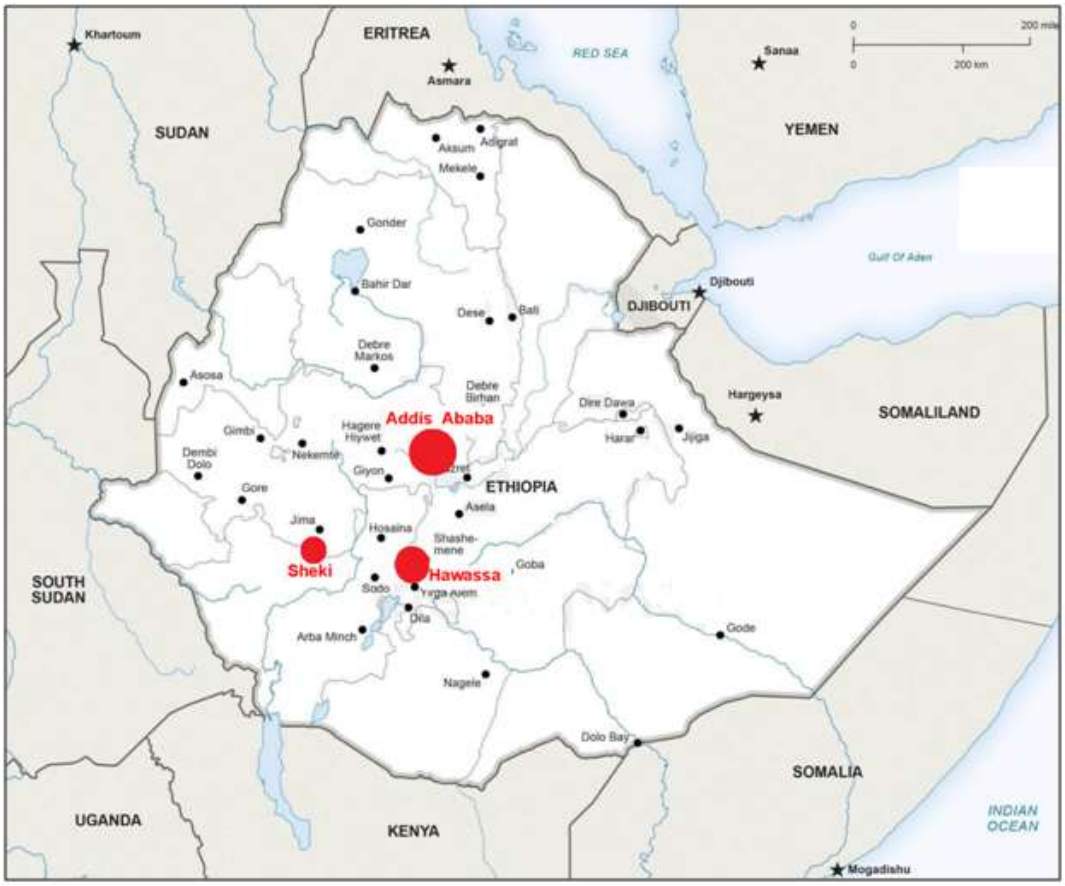
The discussion chapter of the research finding was supplemented with results from focus group discussions (FGDs), which was useful to elaborate upon and put in context the results and to provide a more productive analysis. Hence, the procedure of Q-Squared approach was partially applied, as it is a useful tool in poverty analysis (Shaffer 2013). The Q-Squared approach uses data from quantitative and qualitative sources for triangulation of results. It is instrumental in answering the research questions by providing a complete understanding of the characteristics of the poor and their underlying strategies in addressing food insecurity.

3.2 Description of the Study Sites

This research represented layers of urban hierarchies (small, medium and big urban sites) that are characterised by their function and population size. Accordingly, the federal capital of Ethiopia (Addis Ababa), the regional capital of SNNPR (Hawassa), and the district capital of Dedo (Sheki) were purposively selected to represent big-, medium- and small-sized urban centres respectively. In the preparatory phase of the study, the researcher identified several urban centres across regions, taking into consideration the study objectives. Selection of

Addis Ababa was automatic as it is the largest city in the country with a population size of about tenfold of the major regional capitals (such as Bahir Dar, Hawassa, Mekele, and Adama). Selection of the medium and small-sized towns was made based on the judgement considering geographic proximity, economic and socio-cultural characteristics.

Site visits were made to the specific localities of the selected urban centres (Addis Ababa, Hawassa, and Sheki), and discussions were made on the study plan with local municipalities before making the final decision. The final selection of the medium- and small-sized towns (Hawassa and Sheki) was made not only based on the study site characteristics, but also on the willingness of local administration to facilitate the study process. Feasibility of the logistics arrangement was also considered in deciding the selection of the study sites.



Source: https://www.onestopmap.com/product/printable-vector-map-ethiopia-political-103/

Figure 2: Geographic distribution of the study sites

Typical slum communities were identified from each of the selected urban areas: ***Korea Sefer*** from Yeka sub-city of Addis Ababa, ***Leku*** from *MehalKetema* sub-city of Hawassa, and ***Sherifi*** from the small-sized town Sheki. A detailed description of the urban sites and the study community are presented in subsections3.2.1 to 3.2.3.

3.2.1 Addis Ababa

Addis Ababa is the capital city of Ethiopia, with a current population of 4.8 million, increasing at an annual growth rate of 4.4% (Macrotrends 2020). Addis Ababa, besides being the seat of the Federal government, it is also home to the African Union, UN, and several other international organisations. Addis Ababa city is subdivided into ten sub-cities. According to Tolon (2008), over 80 % of Addis Ababa is categorised as a slum. Yeka is one of the sub-cities, which is partly inhabited by slum communities. For this study Woreda 4 of YekaSub-city (commonly called as *Korea Sefer*) located at 9° 2'29.30 "N 38° 46'31.94 "E was selected. *Korea Sefer* is named after the first settlers who were veterans of the Korean War. The site is one of the typical slum settlements in Addis Ababa situated on a steep slope along ***kebena*** river.

Source: Google earth

Figure 3: The study site in Addis Ababa

3.2.2 Hawassa Town

Hawassa is the regional capital of Southern Nations, Nationalities and People's Region (SNNPR) on the shores of Lake Awasa in the Great Rift Valley. Hawassa is one of the most progressive urban centres in Ethiopia. It is located 285 km south of Addis Ababa. According to the estimate (CSA 2013), Hawassa town is inhabited by the population size of 301,514. Hawassa has eight sub-cities and 32 kebeles. *Mehal Ketema* is one of the sub-cities located at the centre of the town dominated by slum communities, and it is subdivided into three kebeles. For this study *Leku* Kebele, located at 7° 3'31.28 "N 38° 28'51.20 "E, was selected. *Leku* Kebele was selected because it is predominantly slum neighbourhood where livelihoods are based mainly on petty trade and daily labour.

Source: Google earth

Figure 4:The study site in Hawassa town

3.2.3 Sheki Town

Sheki Town, established in the late 1940s, is currently the administrative centre of *Dedo* district in Jimma zone of Oromiya region. *Sheki* is subdivided into two kebeles, *Sherifi* and *Sheger*. According to the current estimates of CSA (2013), *Sheki* town has a population of 9,290. From among the two kebeles, *Sherifi* which is the slum part of *Sheki* town, located at 7°30'28.24"N 36°52'55.13"E, was selected to be included in this study. According to the local

administration's official record, 787 households (population size of about 4000) inhabit *Sherifi* kebele. From among the households, 20 % are female-headed, and poor households whose livelihoods are based on daily labour and petty trade inhabit the locality.

Source: Google earth

Figure 5: The study site in Sheki town

3.3 Study Population, Sample Size, and Sampling Procedures

3.3.1 Study Population

Most urban sites in Ethiopia and elsewhere in SSA are dominated by slums (Habitat 2014; Habitat 2016). According to the estimates by the Global Urban Indicators Database, UN-Habitat (2014), 73.9 % of the urban population (13.6 million) in Ethiopia lives in slum areas. As urban food insecurity is a phenomenon prevalent in urban slum areas, this study focused on slum neighbourhoods of the three of the selected urban sites.

3.3.2 Sample Size Determination (Households)

Sample size determination involves the estimates desired, target population, precision and confidence level wanted, estimation domains, clustering effect, allowance for nonresponse.

The sample size is the central feature that governs the overall design of the sample. The following formula was applied as recommended by the guideline of the United Nations (2008) for calculating the number of households that must be selected for a household socio-economic survey.

$$n = \frac{z^2(r)(1-r)(f)(k)}{(p)(h)(e^2)}$$, Where:

n	is the parameter to be calculated, the sample size in terms of number of households to be selected	n
z	The statistic that defines the level of confidence desired, in this case, a 95 % confidence level	1.96
r	% of the urban population under the poverty line in 2015/16 (According to "Ethiopia's Progress Towards Eradicating Poverty: An Interim Report on 2015/16 Poverty Analysis Study"	14.8%
f	This is the sample design effect, deff, taken from similar studies as recommended by (Gonzalez 1997; Kaiser 2006). Deff is high due to variation in the study variables across the urban hierarchies	2
k	A multiplier to account for the anticipated rate of nonresponse (here the researcher assumes the overall nonresponse rate to be high in urban surveys based on the experience from other similar studies	1.3
p	The proportion of the total population accounted for by the target population and upon which the parameter, r, is based (Estimated % of the urban population in Ethiopia that lives in slum areas as per UN-Habitat, 2014)	74%
h	The urban average household size of Ethiopia based on the 2007 Population and Housing Census result	3.8
e	The margin of error to be attained	3%

A sample size of 498~500 households was estimated with the application of the above formula. The estimated sample size was equally divided into three urban locations (166 households surveyed from Addis Ababa city and Sheki town each and 168 surveyed from Hawassa town). Technical justification of the sample size as related to the assumptions of the regression model is indicated in Section 3.9.4.

3.3.3 Sampling Technique

The sampling technique used in this study followed a stratified random sample where the study population is divided into three subgroups representing the small-sized town, medium-sized town, and big city located in different regions. The sampling procedure for the selection of households followed a probability sampling technique based on the list of poor households registered for UPSNP obtained from the respective local administration offices used as the sample frame. Probability sampling was used as it permits scientific estimates with a specific degree of confidence to be made from the survey that can be inferred to represent the study population from which the sample was drawn (De Vaus & de Vaus 2013). The registration consisted of information such as the name of the head of the household, block number, and house number that were necessary to identify the randomly selected households. The study households were selected from the sample frame with the application of a systematic random sampling technique for it allows the samples to spread more evenly over the entire population in the recorded list. In this procedure, every k^{th} household in the list was selected (systematically) for inclusion in the sample. In situations where the selected household was not found after a repeated trial during the period of the fieldwork, replacements were made per the procedure of systematic random sampling.

3.4 Study Tools

3.4.1 Household Questionnaire

A comprehensive household questionnaire was designed for the research (Annex C-I). The questionnaire comprised two parts. The first part of the questionnaire was dealt with the background characteristics of the household, and it consisted of questions relevant for gathering socio-economic and demographic information related to the household. These

include employment status, marital status, migration and education status of the head of the household; household size; ownership of assets; household income sources; type of social support the household received in the last one year; and some measures of social link with the kin structure in rural areas.

The second part of the household questionnaire includes a set of questions related to the measurement of food security. Food security status of the household was measured with the application of three of the commonly used global measurements, HFIAS, FCS, and rCSI. These tools were used to measure experience-based food security, dietary diversity, and measure of coping with food access insecurity, respectively. Because there is no single food insecurity measurement to capture the different elements of food security, FAO (2013) recommended combining multiple indicators to improve accuracy, specificity, and precision.

HFIAS is a measurement of food security based on an extensive review examining commonalities in the experience and expression of the access component food insecurity across cultures (Leroy et al., 2015). The HFIAS includes nine items that measure both occurrence and frequency and represent the universal domains associated with household food security using a recall period of 30 days.

FCS is a composite score that includes information on dietary diversity and on the frequency of food group consumption by assigning weights to the different food groups. The food items are "cereals (bread, rice, maize, barley) and tubers (potatoes, sweet potatoes); pulses and nuts (beans, lentils, peas, peanuts, and the likes); vegetables; fruits; meat and fish (all types); dairy products (milk, yoghurt, cheese, other milk's products); sugar, honey; and oil, fat, butter" (WFP 2008:20). FCS measures the consumption of these food groups by a household during the seven days before the survey (WFP 2008).

Reduced CSI (rCSI) is a reduced version of CSI that measures coping strategies of food security using five pre-weighted strategies (Maxwell & Caldwell, 2008). The items in this measurement include eating less-preferred foods, borrowing food or money from friends and relatives, limiting portions at mealtime, limiting adult intake, and reducing the number of meals per day. The rCSI measures the level of stress to cope with food insecurity when the household runs out of food stock or when it does not have money to buy food needed by the household during the seven days before the survey.

3.4.2 Focus Group Discussion (FGD) Guide

The FGD aimed to collect qualitative data on the household level coping behaviour in the situation of food insecurity from the purposively selected representatives of the food-insecure household. The discussion topics were based on the list of coping behaviours taking note of what has been used in the 2015/16 WMS national survey. A comprehensive guide was prepared for conducting FGD (Annex C-II).

3.5 Pilot Studies

Before the start of the actual data collection, the questionnaires were pilot tested at each of the study sites (Addis Ababa, Hawassa, and Sheki). The pilot study refers to pre-testing of a research instrument such as the household questionnaire, which is a crucial element of good study design (Van Teijlingen & Hundley 2001). Conducting a pilot study increases the likelihood of success in the main study as it enables the researcher to identify potential challenges in the process and take measures ahead of the actual data collection. The researcher conducted the pilot tests in the neighbouring kebeles (communities) of the study sites during February 25-28, 2019. At the testing stage, each questionnaire took about 15-20 minutes. Consequently, the pilot test helped to test the validity of the instrument and to

identify questions that were not easily understandable by the respondents. Questions found to be incomprehensible were revised to make the study as concise and accurate as possible.

3.6 Data Collection

3.6.1 Household Survey

Six enumerators, familiar with the study sites, were recruited. The enumerators were university graduates in relevant fields of study, and they were also required to have prior experience in collecting household survey data in similar studies. Local assistants, one for each site, were also recruited to facilitate identification of households and to arrange appointments for interviews. The researcher oriented enumerators for three days (Mach1-3, 2019) to enhance their familiarity with the questionnaire. The training session was mainly devoted to instruction on interviewing techniques (through mock interviews) and field procedures, briefing on the study objectives and supporting enumerators to have a detailed understanding of the purpose of each question in the questionnaire.

Enumerators were provided with a complete list of the randomly selected households based on which they were able to identify the location of each household with the help of a local assistant and arrange appointments for a visit. Local assistants were instrumental in identifying the selected households, as most of the houses in the slum communities were not accessible and easy to identify. The researcher attended the interviews of the first 3-4 questionnaires at each site.

General information related to the background characteristics of the household was collected from an adult member of the household available at home during the visit. And, information related to food consumption were collected from an adult member of the household with adequate awareness of the food prepared/consumed in the household during the study period.

Before starting the interview culturally appropriate greetings, the introduction of the purpose of the study, and gaining the consent of the respondent was an essential step. Enumerators explored an appropriate environment for interviewing the household to avoid interruption and to secure privacy. Assuring the respondent on the confidentiality of the collected information was also a necessary step.

Call back arrangements were made in situations where the respondent was not able to give precise information to some of the questions, or unable to continue the interview due to personal reasons, or in situations where there was no adult member of the households available for an interview. It was a routine duty of the enumerators to assure that all questions were answered, and if there were questions not answered due to refusal, call back notes were attached to the questionnaire. In situations where there was inconsistency in the collected information, the enumerators were sent back to the household to validate the response. Household data collection was completed in three weeks period March 4-24, 2019.

3.6.2 Qualitative Data Collection

The qualitative data collection plan consisted of an arrangement to collect information about the status of household food insecurity in the slum communities, and the mechanisms they adopt to cope with food insecurity, from a group of household representatives through FGDs. Three FGDs (one FGD per site) were conducted with purposively selected food-insecure household heads. The FGDs were conducted after the completion of the household surveys at each site (Sheki - March 10, Hawassa - March 17 and Addis Ababa - March 24). Between 10 and 12 households participated in the FGD sessions. The researcher moderated the FGDs while an assistant was involved in taking notes and an audio record of the sessions. The purpose of the FGDs was to obtain some further in-depth understanding of the level of the household stress because of their degree of vulnerability to food insecurity and to discuss the

findings adeptly. Because this study aimed to model how households cope with food access insecurity quantitatively, the researcher did not present the qualitative data results in Chapter Five but used them in the discussion part (Chapter Six) to complement the quantitative findings.

3.7 Ethical Considerations

After the ethical clearance procedure of the university was passed (Annex D), official permission was granted from the concerned local administrations of Addis Ababa, Hawassa, and Sheki with the help of a support letter from UNISA Regional Centre in Addis Ababa (Annex E). Respondents were approached with respect, and they were asked for their consent. For a uniform application, respondents were asked to sign consent forms at the beginning of the survey. All the possible efforts were made during and after the interview to ensure the respondent's privacy. The study applied anonymous coding to ensure confidentiality, and the name of the participants was not written on the survey questionnaire. To maintain the privacy of the interviewee questionnaire surveys were carried out in the presence of only the enumerator. Moreover, respondents were ensured that their participation in the study was voluntary and that they were free to interrupt or discontinue the interview at any time.

3.8 Validity and Reliability

Validity is about the extent to which an instrument measures what it is supposed to measure, which includes both external validity and content validity. A data collection instrument is considered reliable if the same result can be obtained from using the instrument on repeated occasions. The tool used for measuring the dependent variables for this research (rCSI) and other measures of food security used in this study (such as questions for estimating FCS and

HFIAS) is being used globally. The validity and reliability of these tools have been tested and verified in several studies at different times in different parts of the world (Addison et al. 2007; Cafiero et al. 2014; Knueppel et al. 2010; Maes et al. 2009; Maxwell et al. 2013). As indicated in Section 3.5, the household questionnaire was pilot tested, and its validity for the study has been ensured.

3.9 Data Analysis

3.9.1 Analysis of Secondary Data

Chapter Four of this thesis presents a descriptive analysis of the secondary data from HCES and WMS of 2004/5, 2010/11, and 2015/6 that was conducted by the Central Statistical Agency of the Government of Ethiopia. The initial HCES and WMS were conducted in 1995/1996, and have been conducted every five years since then. The 2015/2016 HCES and WMS was the fifth round.

Table 1: Data source and method of analysis concerning the specific objectives of the research

No.	Research objective	Data source	Method of analysis
1	Explore the state of food insecurity in Ethiopia across time	**Secondary data** National survey data from the Central Statistical Agency (CSA) in SPSS format • Household consumption expenditure survey (2004/5, 2010/11, and 2015/16) and • Welfare monitoring survey (2004/5, 2010/11, and 2015/16);	• Descriptive statistical analysis of the national-level survey data across time
2	Investigate the relationship between coping with food access insecurity and household structure and composition across urban hierarchies in Ethiopia	**Primary data** • Household survey of 500 households at three of the urban study sites (Addis Ababa, Hawassa and Sheki). • FGDs with households at three of the study sites	• Descriptive analysis of the household survey data, • Standard multiple linear regression model. Dependent variables (coping with food access insecurity (rCSI) which is a
3	Investigate the relationship between coping with food access insecurity and urban-rural linkages across urban hierarchies in Ethiopia		
4	Investigate the relationship between		

No.	Research objective	Data source	Method of analysis
	coping with food access insecurity and asset ownership across urban hierarchies in Ethiopia		continuous variable)
5	Investigate the relationship between coping with food access insecurity and social protection programs across urban hierarchies in Ethiopia		

The result of the secondary data analysis provides a descriptive analysis of the food security indicators at a national level across time. The study results of the core subject of this research, correlation analysis of predictors of coping with food access insecurity across urban hierarchies (Objective 2, objective 3, objective 4, and objective 5) are presented in Chapter Five using the analysis of primary data collected with a cross-sectional survey of households from slum areas representing hierarchies of urban areas (small-sized town, medium-sized town, and big city).

Table 2: Sample of households surveyed in HCES and WMS national surveys (2004/5-2015/16) by region

Region		2004/5			2010/11			2015/16		
		Rural	Urban	Total	Urban	Rural	Total	Urban	Rural	Total
Tigray		851	864	1,715	1,102	1,109	2,211	1,118	1,186	2,304
Afar		419	533	952	704	542	1,246	769	575	1,344
Amhara		2,023	1,952	3,975	2,722	1,968	4,690	3,352	2,019	5,371
Oromiya		2,320	2,297	4,617	3,240	2,255	5,495	4,070	2,361	6,431
Somali		470	680	1,150	1,011	512	1,523	1,154	572	1,726
Benishangul Gumuz		525	541	1,066	731	542	1,273	766	578	1,344
SNNP		1,983	1,096	3,079	1,776	1,960	3,736	3,096	2,084	5,180
Gambella		-	-	-	679	562	1,241	745	599	1,344
Harari		287	345	632	374	285	659	386	286	672
Addis Ababa City		276	3,141	3,417	3,509	-	3,510	3,828	-	3,828
Dire Dawa City		285	386	671	357	274	631	385	287	672
Total	n	9,439	11,835	21,274	16,205	10,010	26,215	19,669	10,557	30,216
	%	44.4%	55.6%	100.0%	61.8%	38.2%	100.0%	65.1%	34.9%	100.0%

Source: Author's calculation based on the 2004/5, 2010/11, and 2015/16 WMS and HCES national survey data, CSA, Ethiopia

The secondary data (national surveys) were obtained from CSA in SPSS format. The initial step in the analysis of the secondary data was to understand its structure and definitions used. Descriptive analyses of common food security indicators by the background characteristics of households are presented to make comparison across time possible.

According to the HCES report (CSA 2018), an urban centre refers to all administrative capitals (regional, zonal and woreda/district capitals) and all localities with a population of 1000 or more persons and whose inhabitants are primarily engaged in non-agricultural activities. The rural category includes areas in all the nine regional states as well as the rural part of Dire Dawa City Administration. The sample of households covered during the successive national surveys of 2004/5, 2010/11, and 2015/16 are shown in Table 2.

The place of residence in the 2015/16 HCES and WMS was classified into rural areas, small-sized towns, medium-sized towns, and big cities that are used to show the results across the continuum of urban hierarchies. According to the classification, the big cities include regional capitals (9 cities), twelve other major urban centres with larger populations, as well as ten sub-cities of Addis Ababa City Administration. The domain of medium and small urban centres was formed for eight regions. There is no domain in this category for Harari Regional State and Addis Ababa and Dire Dawa City Administration, as they do not have urban centres other than those grouped under major urban centres.

The secondary data analysis is presented across time include household structure and composition, socio-economic characteristics of households (such as place of residence, household expenditure, sources of household income, household's participation in social protection programs, and household's involvement in micro and small business activities), food security measures/indicators (such as calorie intake, food FCS, and rCSI) and correlation analysis of the food security measures.

Table 3: Surveyed households by region and place of residence

Region	Area of Residence				Total
	Big cities	Medium-sized towns	Small-sized towns	Rural	
Tigray	358	440	320	1,186	2,304
Afar	385	192	192	575	1,344
Amhara	1,555	969	828	2,019	5,371
Oromiya	1,923	1,121	1,026	2,361	6,431
Somali	385	512	257	572	1,726
Benishangul Gumuz	384	76	306	578	1,344
SNNP	1,919	604	573	2,084	5,180
Gambella	396	-	349	599	1,344
Harari	386	-	-	286	672
Addis Ababa city	3,828	-	-	-	3,828
Dire Dawa city	385	-	-	287	672
Total	11,904	3,914	3,851	10,547	30,216

Source: Author's calculation based on the 2015/16 WMS and HCES data, CSA, Ethiopia

3.9.2 Analysis of Primary Survey Data

Verification of the quality of the data was made on-site that the researcher checked all the filled-in questionnaires to assure completeness and consistency of the answers. All the verified questionnaires were encoded to the computer system using the Census and Survey Processing System (CSPro) and finally exported to SPSS version 23 for an in-depth analysis. CSPro was used for the data entry as it has many features to improve data quality (Ponnusamy 2012).

Necessary analysis tools such as univariate and bivariate tables and graphs were produced to oversee the pattern and relationship between variables and to identify the association between predictors of coping with food access insecurity (the dependent variable of the research). Correlation analysis and chi-square tests were conducted to explore the significance of the relationships between the independent variables (IVs) and the DV. Standard multivariate linear regression analysis was finally applied to investigate the ability of the IVs to predict the DV. Table 4 summarises the variables used for the construction of the standard linear regression model and the measurements used.

Table 4: Summary of the variables used for the construction of the standard linear regression model and description of the measurements used

Variables	Type	Description
Dependent Variable		
• rCSI score	Continuous Variable	rCSI is an index (continuous variable) developed from a set of five questions about the strategy households adopted to cope with the situation of insufficient food (Maxwell & Caldwell 2008; Subedi & Kent 2018). The DV measures the level of stress exerted to cope with food access insecurity when the household runs out of food stock or when it does not have money to buy food needed by the household during the seven days before the survey.
Independent Variable		
• Age of the head of the household	Continuous Variable	
• Gender of the head of the household	Dummy variable	0= Female & 1= male
• The education level of the head of the household	Ordinal variable	The education level of the head of the household was coded as: 0 for illiterate and hierarchical data of school grades1-12 for those who passed through formal schooling, 13 for graduates of technical college, and 14 for graduates with a degree and above
• Percentage of children aged below 14 years in the household	Continuous Variable	
• Household structure	Dummy variable	0= Nuclear & 1= Extended
• Asset index score	Continuous variable	The variable was generated with the application of principal component analysis (PCA) on 31 items
• Source of income	Categorical variable	This variable consisted of 5 responses (salary, daily labour, small business, remittance, and other miscellaneous income sources (such as rent income, farming, begging, prostitution, and the likes). It was converted to dummy variables for the construction of the model, and the salary was used as a reference variable.
• Access to urban productive safety net programs	Dummy variable	This refers to the household's participation in either of productive safety net program, supplementary feed for vulnerable children, food emergency resources, employment promotion program, or household asset-building programme over the past year. The dummy variables represent 0= No & 1= Yes.
• Access to loan from a microfinance institution	Dummy variable	This refers to the household's access to loan from microfinance institutions over the past year. The dummy variables represent 0= No & 1= Yes.
• Urban-rural social linkage	Continuous variable	Six constructs that were distinguished based on the review of literature were used to measure the urban-rural link: possession of the property, engagement in economic activities, participation in social and cultural activities (such as weddings, funerals, and civic meetings), exchange of money or goods, frequent communication with relatives and families, and exchange of consultation. Each was a dummy variable with 0 for No and 1 for Yes. The analysis used the sum of the dummy variables that the sum being 0 represents no link while 5 represents the most reliable link with the kin structure at rural areas.

3.9.3 Evaluation of the Assumptions for Standard Regression Model

Sample Size

Before conducting the standard regression analysis, the relevant assumptions of this statistical analysis were tested. Firstly, it was necessary to check if the sample size was enough to be included in the analysis. Tabachnick and Fidell (2014) suggested a ratio of the number of cases to independent variables to be 50+8m (where m is the number of IVs). As the number of IVs included for the regression analysis is 13, the required minimum sample size, in this case, was 154. The study has met the sample size requirement since it has more than the minimum sample size for conducting regression model for each site (166 for Addis Ababa and Sheki each and 168 for Hawassa) and a total of 500 cases for regressing the global model.

Linear Relationship between the IVs and the DV

The first assumption of multiple linear regressions is that a straight line characterises the relationship between the IVs and the DV. A simple way to check this was by producing scatter plots between each of the IVs and the DV. Annex A presents the scatter plots of each of the IVs against the DV. A straight line can represent the scatter plots presented for each variable between the IVs and the DV (Annex A), suggesting that the relationship between these variables is linear.

Normality

The assumption that normality of the errors between observed and predicted values (the residuals of the regression) was tested by looking at the P-P plot and histogram of the standard residuals of the regression model (Figure 6). In this case, the P-P plot showed that the points generally follow the normal (diagonal) line with no substantial deviations, which indicates that the residuals are normally distributed. The histogram of regression standard

residual of the DV (CSI score) also shows that the mean was 5.74E-16, which is very close to 0 and the standard deviation of 0.987 is also very close to 1. Both the P-P plot and histogram suggested that the assumption of normality of the residuals was intact.

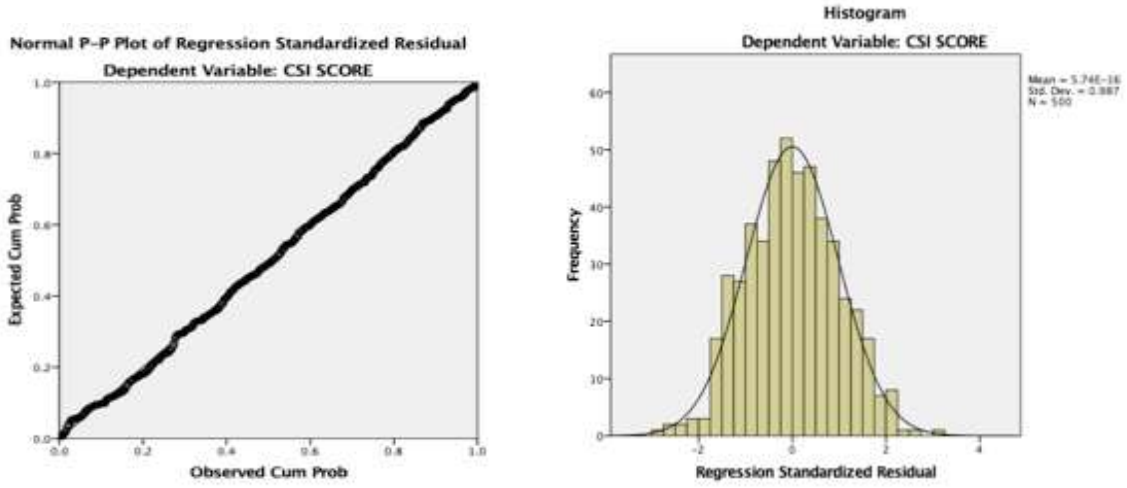


Figure 6: Normal p-p plot and histogram of regression standardised residual

Homoscedasticity

Homoscedasticity implies that the variance of errors is the same across all levels of the IV. When the variance of errors differs at different values of the IV, it indicates heteroscedasticity. According to Tabachnick and Fidell (2014), slight heteroscedasticity has little effect on significance tests; however, when heteroscedasticity is marked, it can lead to severe distortion of findings and severely weaken the analysis increasing the possibility of a Type I error. A plot of standardised residuals versus predicted values can show whether points are equally distributed across all values of the independent variables. Homoscedasticity refers to the assumption that the variation in the residuals (which is the amount of error in the model) is similar at each point of the model. A scatter plot of residuals versus predicted values is a good way to check for homoscedasticity. As seen in Figure 7, there was no clear pattern in the distribution; suggesting the assumption of homoscedasticity has been met.

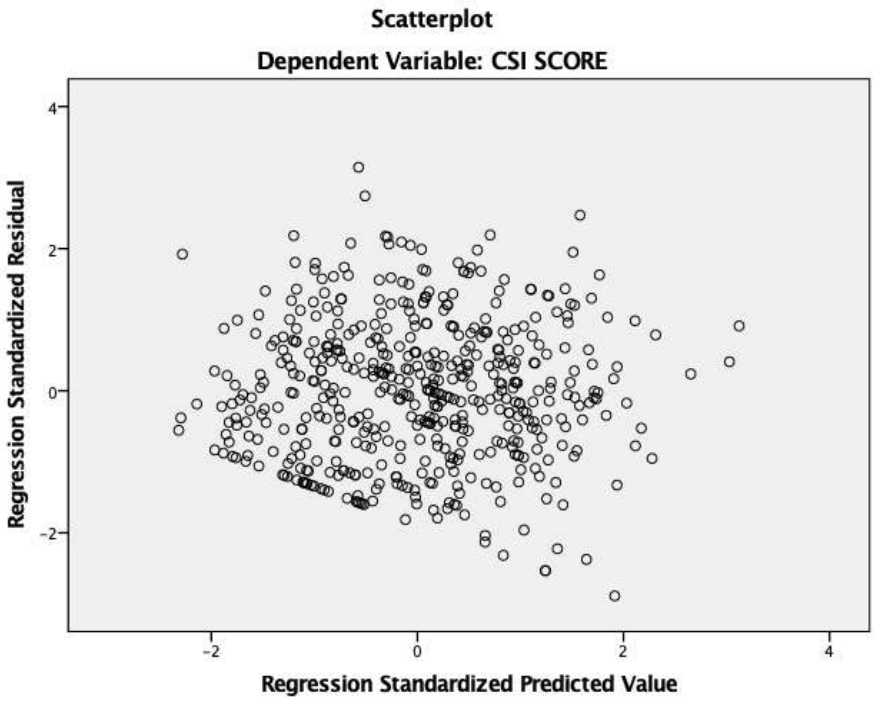


Figure 7: Scatter plot of the standardised predicted values by residuals

Independence of Residuals

The Durbin-Watson statistic is used to test the assumption that the residuals are independent (or uncorrelated). The statistic can vary from 0 to 4 and for the assumption to be met the value of the statistic should be close to 2; values below 1 and above 3 are cause for concern (Tabachnick & Fidell 2014). In this case, the value is 1.73 (see the global model summary annexe B), so it can be said that the values of the residuals were independent, and the assumption has been met.

Outliers

Multivariate outliers were sought from the Mahalanobis distance of each case to the centroid of all cases, which was computed as a separate column in the data file. The Mahalanobis distance is distributed as a chi-square (χ^2) variable, with degrees of freedom equal to the number of IVs (Tabachnick & Fidell 2014). To determine which cases were multivariate outliers, it was seen that χ^2 at a critical value of $\alpha = .001$ for 13 df, the tabulated value was 34.53 while the largest Mahalanobis distance computed in the data file was 32.47 indicating

that there was no multivariate outlier among the IVs. Similarly, looking at Cook's Distance values created a new column in the data file that could also test this assumption. Any values over 1 are likely to be significant outliers (Tabachnick & Fidell 2014). The highest of the Cook's Distance values created in the data was .03375 that all the created values were under 1, suggesting individual cases were not unduly influencing the model.

Multicollinearity and Singularity

The assumption that the predictors (or IVs) were not too highly correlated was tested with the correlation matrix of the DV and IV variables. According to Tabachnick & Fidell (2014), multicollinearity occurs when the independent variables are too highly correlated with each other. The value of correlation coefficient (above 0.8) between IVs is mostly considered as problematic. Pallant (2016), however, suggests this margin to be above .9. Whichever is the case, this was not an issue in the data used for this analysis, as the highest coefficient between the IVs was between income from remittance and age of the head of the household with a correlation coefficient of r =. 437, which is much lower than the indicated threshold.

In a regression analysis, Variance Inflation Factor (VIF) and Tolerance statistics, are also formally used to check that the predictors are not too highly correlated, also tests this assumption. For the assumption to be met, VIF scores need to be well below 10, and tolerance scores to be above 0.2 (Tabachnick & Fidell 2014). As shown in Annex B, Tolerance values of the regression model range between .437 to .926, which is well within the acceptable margin; and VIF values range between 1.08 and 2.162, which are well above the lower limit that ascertained the absence of multicollinearity in the data. Singularity occurs when one independent variable is a combination of other independent variables. The regression model is free of the problem concerning the singularity as none of the IVs in the model were a combination of the other IVs in the model.

3.10 Limitations of the Study

A comprehensive study of food insecurity involves the analysis of availability, access, utilisation, and stability components. Nonetheless, the scope of this research is limited to the access component. Because access has both economic and physical dimensions (the state of the infrastructure and market facilities), the focus of this study is limited to the economic access component of food security at a household level where most risk management and coping strategies are employed. Geographically, the scope of the research is limited to food insecure urban households from three urban centres selected from across the urban hierarchies of Ethiopia: Addis Ababa (the national capital), Hawassa (SNNPR capital), and Sheki (Dedo district capital). The study sites are from the Central and the South Western regions where the traditional foods are diverse, and drought is uncommon. The findings of the study may not be representative of the northern regions where famine is recurrent, food supply is a concern, and the food culture is mostly dependent on cereal crops. Methodologically, the primary household survey was a cross-sectional study that might not have captured the time factor as the price of locally produced food commodities varies during and after the harvesting season.

3.11 Conclusion

This chapter discussed the methodology used for this study. The description of the study design involved both primary and secondary data sources. The primary source was based on a household survey and FGDs from three urban sites representing small, medium, and big cities along the urban hierarchies. Secondary sources included three rounds of the national surveys of household consumption and expenditure and welfare monitoring for fifteen years (2004/5, 2010/11, and 2015/16).

Further, description of the study sites, the target population for the research, and study units were described in this chapter. The sample size determination and sampling design were also discussed, which was followed by a description of the sampling procedure. Concerning the study tools, the chapter provided a discussion of the comprehensive household questionnaire used for the household survey that comprised of two parts. The first part of the questionnaire dealt with the background characteristics of the household while the second part comprised sets of questions related to the different measures of food security status of the households.

Before the start of the actual data collection, the questionnaires were pilot tested to assess the validity of the instrument and to identify potential challenges in the process and take measures ahead of the actual data collection. Validity and reliability of these tools have been tested and verified. Issues related to ethical considerations have also been discussed that the study passed through the ethical clearance procedure of UNISA, and the concerned local administrations of the study sites granted official permission. Respondents were also approached with respect and asked to sign a consent form at the beginning of the survey. The scope of this study was limited to only the access component of food security, and it is limited to the analysis of the household level food insecurity where most risk management and coping strategies are employed.

The data analysis plan was provided corresponding to each study objective. Household consumption and expenditure survey and welfare monitoring survey of 2004/5, 2010/11, and 2015/16 obtained from CSA in SPSS format was subjected to descriptive statistical analysis. Whereas, the survey of 500 households from the three urban study sites was subjected to descriptive analysis of the socio-demographic characteristics of the households and used for the construction of a standard multiple linear regression model. The dependent variable (rCSI) is a continuous variable that measures the level of stress households experienced to

cope with food access insecurity when they run out of food stock, or when the household does not have money to buy food needed during the seven days before the survey.

The independent variables (factors) were the age, gender, and education level of the head of the household, percentage of children aged below 14 years in the household, household structure, asset index score, source of income, access to urban productive safety net programs, access to loan from a microfinance institution, and urban-rural linkage. The assumptions for regression analysis concerning sample size, linear relationship between the IVs and the DV, normality, homoscedasticity, independence of residuals, outliers, and multicollinearity and singularity were all met.

The subsequent chapters (Chapter Four & Chapter Five) are dealt with quantitative analysis of the secondary and primary data, respectively. Chapter Four provides the situation of the food security situation in Ethiopia based on an in-depth descriptive analysis of secondary data from National Surveys (HCES and WMS) conducted by the Central Statistical Agency (CSA) in 2004/5, 2010/11, and 2015/6. Chapter Five deals with the analysis of primary data from the household survey conducted from the three sites (Addis Ababa, Hawassa, and Sheki) along the continuum of urban hierarchies representing small, medium and big city respectively.

CHAPTER FOUR

HOUSEHOLD FOOD SECURITY IN ETHIOPIA

4.0 Introduction

In this chapter, an attempt is made to provide the background situation of the food security situation in Ethiopia based on an in-depth descriptive analysis of secondary data from National Surveys (HCES and WMS) conducted by the Central Statistical Agency (CSA) in 2004/5, 2010/11, and 2015/6. The chapter has two objectives: (a) to provide an in-depth empirical strength to the literature on the Ethiopian food security situation, and (b) to provide a comprehensive analysis of food security in Ethiopia across time and urban hierarchy using nationally representative data (objective 1 of the thesis).

Descriptive analysis of the secondary data concerning demographic characteristics of households such as household size, household headship, household structure (extended and nuclear), and socio-economic characteristics such as household expenditure, sources of income, and participation in social protection programs and micro and small business activities are presented to show food security variant across these factors. The analysis of the food security measures based on the secondary data includes consumption of kilocalories per adult equivalent per day, FCS, rCSI, and a combined indicator of CSI and FCS across the urban hierarchy, year, and demographic and socio-economic characteristics of households. The final section of this chapter is devoted to describe the correlation between the different food security measures and provide further analysis of a combined index of household food security to portray the general picture of the state of household food security in Ethiopia during the analysis period.

4.1 Household Structure and Composition

Household composition is a description of the household according to specific characteristics of its members that are useful in the analysis of household food security. As identified by Bongaarts (2001), measures of the household composition include household size, age-sex composition, family structure, and household headship. Accordingly, Table 5 presents the summary of the average household size, sex ratio, percentage of female-headed households, size of the extended family members per household, and percentage of households with extended family members based on the data from the HCES and WMS of 2004/5, 2010/11, and 2015/16.

Table 5: Household size, sex ratio, family structure, and household headship by year and place of residence

	2004/5		2010/11		2015/16	
	Urban	Rural	Urban	Rural	Urban	Rural
Average household size	4.4	4.9	3.9	5.0	3.7	4.9
Sex ratio	86%	100%	89%	100%	88%	100%
Percentage of female-headed households	38%	23%	37%	22%	39%	24%
Percentage of households with extended family structure	44%	28%	39%	26%	38%	25%
The average size of the extended family members per household	0.8	0.5	0.7	0.4	0.7	0.4

Source: Author's calculation based on the 2004/5, 2010/11, and 2015/16 WMS and HCES national survey data, CSA, Ethiopia

According to the result, the average household size in urban areas has steadily declined (4.4 in 2004/5, 3.9 in 2010/11, and 3.7 in 2015/16). In rural areas, however, the average household size remained about five persons per household, and it was unchanged almost throughout the analysis period.

Sex ratio, the proportional distribution of the sexes in a population aggregate (expressed as the number of males per 100 females) has revealed that there was an almost similar size of the male and female population in rural areas across all the surveys. In urban areas, however, the size of the female population exceeds the male population, and it was unchanged during

the successive periods (86/100, 89/100, and 88/100 in 2004/5, 2010/11, and 2015/16 respectively).

Investigation of the role of the extended family structure in household food security is one of the targets of this research. The national survey result, in this regard, showed a slight decrease in the overall percentage of the extended family structures in both urban and rural areas within the analysis period. However, the percentage of households with extended family members is significantly higher in urban areas throughout the analysis period (44% versus 28% in 2004/5, 39%vs. 26% in 2010/11, and 38% versus 25% in 2015/16 between urban and rural areas respectively).

Table 6: Household size and structure by area of residence and expenditure quintile

	Household Size	Size of extended HHD members	Household structure		Gender of the head of the household		n
			Extended	Nuclear	Male	Female	
Area of Residence							
Big cities	3.7	0.7	41.7%	58.3%	60.2%	39.8%	11,887
Medium-sized towns	3.7	0.6	32.9%	67.1%	60.9%	39.1%	3,921
Small-sized towns	3.7	0.5	30.2%	69.8%	64.5%	35.5%	3,851
Rural	4.9	0.4	25.3%	74.7%	75.8%	24.2%	10,557
Expenditure Quintile							
Quintile 1	5.9	0.6	29.0%	71.0%	74.7%	25.3%	3,661
Quintile 2	5.2	0.6	33.0%	67.0%	71.1%	28.9%	4,226
Quintile 3	4.8	0.6	34.0%	66.0%	66.8%	33.2%	4,587
Quintile 4	4.1	0.7	38.1%	61.9%	63.1%	36.9%	6,497
Quintile 5	2.9	0.5	31.9%	68.1%	63.3%	36.7%	11,245
Total	4.1	0.6	33.4%	66.6%	66.3%	33.7%	30,216

Source: Author's calculation based on the 2015/16 WMS and HCES data, CSA, Ethiopia

The extended family structure might be a result of the financial difficulties of the hosting family or in a traditional household; it could also be because older relatives are unable to care for themselves alone. Shortage of housing in most urban areas might also be a factor that leads to extended families (cousins, aunts, uncles, grandchildren, grandparents, or any other distant relatives) living together. Looking further into the analysis of the household composition based on the 2015/16 WMS and HCES result (Table 6) the average household size was 3.7, which was similar for all urban categories (big cities, medium-sized towns, and

small-sized towns). The average household size of the rural households was 4.9, which is higher than the average urban household size by more than one person. The result has also revealed a continuous decrease in household size with an increase in expenditure quintile. For instance, households in the lowest quintile (quintile 1) have an average of about six members, while the average household size of households in the upper quintile (quintile 5) was about three members. The result in Table 6 has also revealed that the proportion of households with extended family members in Ethiopia has an increasing trend with the level of urbanisation (42% in big cities, 33% in medium-sized towns, 30% in small-sized towns, and 25% in rural areas). A recent study by Gabrielli et al. (2018) supports the finding that living arrangements in urban areas of SSA follow the traditional paths apart from theories of the interrelationships between modernization and family structures. Other studies also discussed that lack of access to adequate shelter is a common problem for the poor leading to extended household structure (Kumar 2010; Rakodi 2010; Tacoli 2012).

The proportion of female-headed households consistently increases with the level of urbanisation that about 40 per cent of the households in medium and big cities were female-headed while the percentage of female-headed households was 24 per cent in rural areas. The result may imply that vulnerability to food insecurity could be more prevalent in major urban areas of Ethiopia due to a higher percentage of female-headed households. A similar finding was reported in a study in the South African township of Kwakwatsi (Ndobo & Sekhampu 2013).

4.2 Socio-economic Characteristics of Households

This section presents the socio-economic characteristics of households in the HCES and WMS, as they are pertinent to illustrate a variant of household food security across these factors for policy and programming. The variables included here were the place of residence,

household expenditure, household income sources, household's engagement in social protection programs, and household's participation in micro and small business development initiatives. Illustrate

4.2.1 Household Expenditure

Where reliable data on income is not available, expenditure is a better choice to measure inequalities in the living standard of households (Montgomery et al. 2000; Moore & Welniak 2000). Expenditure quintile is frequently used in research to disaggregate households based on their consumption. Quintiles are mostly used to find out how expenditure is distributed among the population. The first quintile contains the bottom fifth of the population on the expenditure scale (the 20 % of the population with the lowest expenditure); the second quintile represents the second fifth (from 20 % to 40 %), and so on; and finally, the fifth quintile represents 20% of the population with the highest expenditure. Estimates by quintiles are helpful to portray distributional differences among households across the wealth hierarchies, representing a vital analysis tool to explore food security status of households.

Table 7: Percentage distribution of households' expenditure quintile according to year and place of residence

Expenditure Quintile	2004/5			2010/11			2015/16		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Quintile 1	18.1%	19.6%	18.8%	12.8%	31.8%	20.0%	5.6%	24.2%	12.1%
Quintile 2	15.7%	20.9%	18.0%	17.0%	24.6%	19.9%	9.2%	22.9%	14.0%
Quintile 3	16.2%	21.0%	18.3%	19.8%	20.4%	20.0%	12.1%	20.8%	15.2%
Quintile 4	17.2%	20.6%	18.7%	23.1%	15.1%	20.0%	22.6%	19.4%	21.5%
Quintile 5	32.7%	17.9%	26.1%	27.4%	8.2%	20.1%	50.4%	12.6%	37.2%
Total %	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n	11,834	9,439	21,273	16,205	10,010	26,215	19,659	10,557	30,216

Source: Author's calculation based on the 2004/5, 2010/11, and 2015/16 HCES national survey data, CSA, Ethiopia

According to the HCES result presented in Table 7, the percentage of urban households in the lowest quintile decreased substantially over time (18.1% in 2004/5 to 5.6% in 2015/16). The percentage of urban households in the highest quintile during these periods, however, has increased from 32.7% in 2004/5 to 50.4% in 2015/16. In rural areas, the percentage of

households in the lowest quintile in 2015/16 was much higher (24%) than it was for urban households (6%) in the lowest quintile. Unlike the situation in urban areas, most of the rural households are still concentrated in the lower expenditure quintiles suggesting predominance of rural poverty in Ethiopia.

Table 8: National estimate of household size and gender of the head of the household by household expenditure quintile

Expenditure Quintile	Household Size	Gender of the head of the household		Total
		Male	Female	
Quintile 1	5.9	75%	25%	3,661 (12%)
Quintile 2	5.2	71%	29%	4,226 (14%)
Quintile 3	4.8	67%	33%	4,587 (15%)
Quintile 4	4.1	63%	37%	6,497 (22%)
Quintile 5	2.9	63%	37%	11,245 (37%)
Total	4.1	66%	34%	30,216 (100%)

Source: Author's calculation based on the 2015/16 WMS and HCES data, CSA, Ethiopia

Looking into the relationship between the average household size and household expenditure quintile in the 2015/16 data (Table 8) revealed an inverse relationship. While households in the lowest quintile have an average of 6 members it decreases along with an increase in expenditure quintile, households in the highest quintile have an average of about three members. Similarly, the percentage of female-headed households also increases consistently with an increase in expenditure quintile.

The household expenditures data is considered a good indicator for household incomes. The result of HCES revealed that households spend half of their expenditure on food, with no significant variation between surveys (51% in 2004/5, 49% in 2010/11, and 51% in 2015/16). The percentage of expenditure on food in Ethiopia varies according to the place of residence. Percentage of food expenditure is generally higher among households in rural areas as compared to the households in urban areas (urban 38% versus rural 54% in 2004/5; urban 40% versus rural 53% in 2010/11; and urban 50% versus rural 56% in 20015/16). A similar finding was reported in other studies, for instance, the low-income groups in Hanoi, Vietnam spend around 40 per cent of their total income on food while the poorest households and

those living in smaller towns of Nepal and Cambodia spend nearly all their earnings on food (Tacoli 2019). A study at Kibera, Kenya (Marx et al. 2013) also shows that the urban poor's food expenditure account for 61 per cent of the consumption.

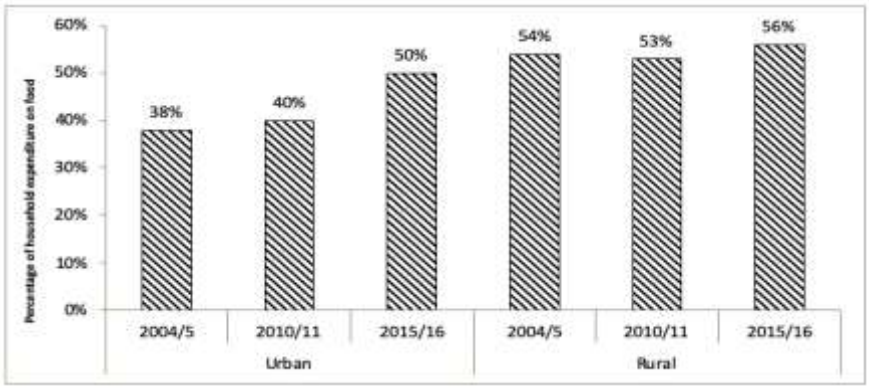
Table 9: Food expenditure as a percentage of total household expenditure by, year, expenditure quintile, and place of residence

Year	Place of residence	Expenditure quintile					Total	n
		Quintile 1	Quintile 2	Quintile 3	Quintile 4	**Quintile 5**		
2004/5	Urban	**58%**	56%	54%	50%	**29%**	38%	11,834
	Rural	**57%**	58%	58%	57%	**48%**	54%	9,439
	Total	**57%**	58%	58%	56%	**42%**	51%	21,273
2010/11	Urban	**47%**	43%	41%	41%	**38%**	40%	16,205
	Rural	**53%**	55%	55%	54%	**50%**	53%	10,010
	Total	**53%**	53%	52%	51%	**45%**	49%	26,215
2015/16	Urban	**60%**	56%	55%	51%	**41%**	50%	19,659
	Rural	**58%**	54%	55%	58%	**55%**	56%	10,557
	Total	**58%**	55%	55%	53%	**43%**	51%	30,216

Source: Author's calculation based on the 2005/5, 2010/11, and 2015/16 HCES national survey data, CSA, Ethiopia

Food expenditure pattern generally operates following Engel's law that the average share of total expenditures spent on food falls as it moves to households in higher quintile (Anker 2011). Comparing the food expenditure between the lowest and highest quintile reveals higher variation in urban areas (58% versus 29% in 2004/5, 47% versus 38% in 2010/11, and 60% versus 41% in 2015/16 between households in lowest and highest quintiles respectively). The difference in food expenditure between households in the lowest and highest quintile in the rural areas was marginal (57% versus 48% in 2004/5, 53% versus 50% in 2010/11, and 58% versus 55% in 2015/16).

The other pertinent finding is that food expenditure across time reveals an increase in household food expenditure in urban areas over time (38% in 2004/5, 40% in 2010/11, and 50% in 2015/16). The apparent change in food expenditure over time in rural areas was not as such noticeable (Figure 8). Escalation of the price of food commodities might have contributed to this fact, as illustrated in a recent report (FAO 2015) on the *State of Food Insecurity in the World*.



Source: Author's calculation based on the 2005/5, 2010/11, and 2015/16 HCES data, CSA, Ethiopia

Figure 8: Household food expenditure as a percentage of total expenditure across time and place of residence

Further analysis of the most recent HCES data (2015/16) shows a variation in food expenditure across the place of residence and between the genders of the head of the household. As shown in Table 10, the average annual food expenditure of households in Ethiopia in 2015/16 was ETB 28,518 and ETB 23,484 in urban and rural areas, respectively. The average exchange rate of *1 US Dollar to Ethiopian Birr (ETB)* in 2016 was 21.8377 ETB. The difference in food expenditure at both urban and rural areas shows considerable variation between the lowest and the highest quintile (ETB 13,733 versus ETB 34,102 in urban areas and ETB 14,267 versus ETB 35,026 in rural areas between the lowest and the highest quintile respectively).

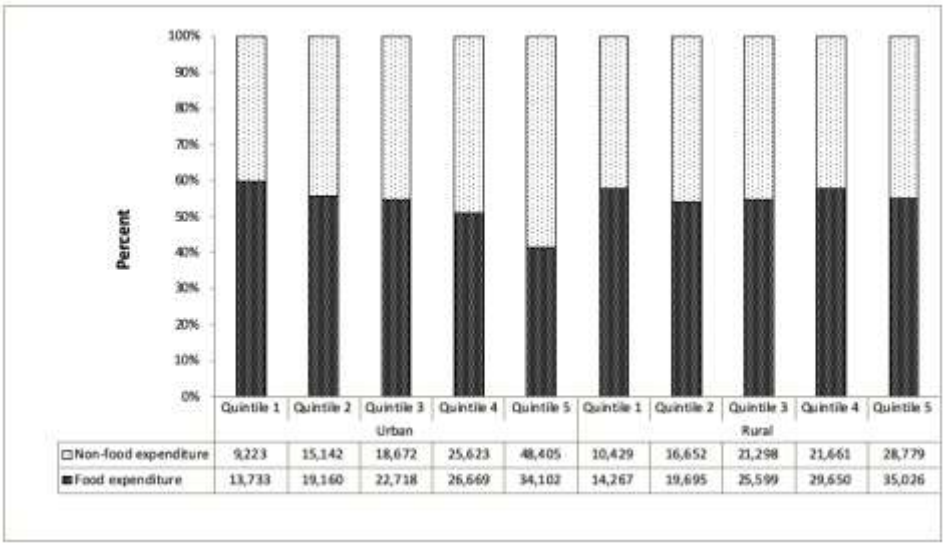
Analysis of food expenditure, according to the gender of the head of the household in both urban and rural areas, revealed a significant difference. Across all quintiles, male-headed household's expenditure on food is higher than the corresponding food expenditure among female-headed households. The overall difference in the average food expenditure between male-headed and female-headed households is significantly high. As shown in Table 10, the average food expenditure among female-headed households is about half (50.1%) of what male-headed households spend. Female-headed households being generally of a smaller size and their income level being lower than the male-headed households could be the reason that accounts for the apparent difference.

Table 10: Annual average household food expenditure (in ETB) according to the gender of the head of the household, expenditure quintile, and place of residence

Place of residence	Expenditure Quintile	Gender of the head of the household		Total
		Male	Female	
Urban	Quintile 1	$14,852_a$	$12,232_b$	13,733
	Quintile 2	$19,951_a$	$17,842_b$	19,160
	Quintile 3	$24,728_a$	$20,000_b$	22,718
	Quintile 4	$28,664_a$	$23,738_b$	26,669
	Quintile 5	$36,776_a$	$29,541_b$	34,102
	Total	30,882	24,790	28,518
	N	12,030	7,629	19,659
Rural	Quintile 1	$14,880_a$	$11,421_b$	14,267
	Quintile 2	$20,984_a$	$15,261_b$	19,695
	Quintile 3	$27,191_a$	$20,305_b$	25,599
	Quintile 4	$32,708_a$	$22,182_b$	29,650
	Quintile 5	$39,015_a$	$27,414_b$	35,026
	Total	24,800	19,371	23,484
	N	7,997	2,560	10,557
Total	Quintile 1	14,873	11,836	14,105
	Quintile 2	20,596	16,691	19,467
	Quintile 3	26,088	20,102	24,100
	Quintile 4	30,100	23,351	27,611
	Quintile 5	37,051	29,304	34,211
	Total	28,453	23,429	26,759
	N	20,027	10,189	30,216

Source: Author's calculation using 2015/16 HCES data

A further illustration of the result in Figure 9 shows that food expenditure as a percentage of total household expenditure in urban areas continuously decreases as it moves to higher quintiles. In rural areas, however, no significant difference in the percentage of food expenditure was observed according to expenditure quintile.



Source: Author's calculation using 2015/16 HCES national survey data

Figure 9: Food and non-food annual expenditure by place of residence and expenditure quintile in Ethiopia

According to the 2015/16 survey data analysis (Table 11), there was a difference in the average food expenditure per person per year between households in big cities and medium-

sized towns is not significant. Nevertheless, the difference is significant when compared with households in small-sized towns and rural areas. On the other hand, the non-food expenditure of households in rural areas, small-sized towns, medium-sized towns, and big cities is statistically significant at a 95% significance level. The reviewed literature in the developing countries including Ethiopia (Alem & Söderbom 2010; Cohen & Garrett 2010; Naicker et al. 2015; Tacoli 2013) has also shown that high food price and escalation of costs of non-food consumption items (such as housing) affect the food security of low-income urban residents as they rely primarily on market purchases.

Table 11: Per person per annum food and non-food expenditure by place of residence

	Big cities	Medium-sized towns	Small-sized towns	Rural	Total
Food expenditure per person per year (ETB)	$9{,}798_a$	$9{,}671_a$	$8{,}663_b$	$5{,}602_c$	8,171
Non-food expenditure per person per year (ETB)	$12{,}095_a$	$10{,}411_b$	$9{,}380_c$	$4{,}401_d$	8,842

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.
Source: Author's calculation based on the 2015/16 HCES national survey data, CSA, Ethiopia

4.2.2 Sources of Household Income

The 2004/5, 2010/11, and 2015/16 HCES has gathered expenditure data as a measure of living standards. Similarly, the WMS conducted along with HCES in the same households within a similar period has collected data on the primary sources of income of households. According to the WMS result (Table 12), the three significant sources of income of households in urban areas were wage and salary (bonus, overtime, and allowances), income from the household enterprise (such as wholesale and retail trade, service trade, manufacturing, construction, mining, and other businesses in both formal and informal sectors); and remittance as per their order.

Wages and salary were the leading sources of income for urban households, at an increasing rate over time, 41% in 2004/5, 44% in 2010/11 and 49% in 2015/16. Wage and salary are increasingly the leading sources of income for urban households in Ethiopia, its contribution has a relative increase of 9% between 2004/5 and 2010/11, and it increased further by 10% between 2010/11 and 2015/16. Income from household enterprise contributes the second highest to the urban households, and it remains almost constant during the analysis period. However, the national level figure in a recent estimate (World bank 2019) shows that the percentage of households earning wage and salary in Ethiopia is one of the lowest in SSA that stood at 13.8 per cent (male 16.5% and female 10.7%) compared with the SSA average of 23.5 per cent (male 29.5% and female 16.6%). It is further low when compared with the neighbouring countries 38.9 per cent in Kenya (male 53.8% and female 23.3%) and 21.9 per cent in Uganda (28.3% and female 15%).

The share of remittance as a source of household income increased over the study period; it increased by 8% from 2004/5 to 2010/11 and 4.2% between 2010/11 and 2015/16. According to the 2015/16 WMS results, the livelihoods of one out of ten households in urban areas depend on income from the remittance. Contrarily, pension and other social security benefits (including a donation from government and NGOs) continued to decline in urban areas during the analysis period.

Table 12: Percentage distribution of the different sources of household income by residence type and year

	Urban			Rural		
	2004/5	2010/11	2015/16	2004/5	2010/11	2015/16
Wages and salaries	40.8%	44.4%	48.8%	3.2%	3.4%	6.9%
Income from household enterprise	27.7%	24.9%	27.3%	4.8%	5.4%	4.8%
Income from agricultural production	6.6%	9.0%	6.2%	88.1%	87.1%	83.5%
Remittance	8.8%	9.5%	9.9%	1.4%	1.3%	1.8%
Pension and other social security benefits	8.2%	4.3%	2.9%	0.8%	0.8%	0.8%
Rent income	2.8%	2.6%	3.7%	0.2%	0.5%	1.9%
Other sources of income	5.1%	5.3%	1.2%	1.5%	1.5%	0.3%
N	11,804	16,205	19,659	9,423	10,010	10,557

Source: Author's calculation based on the 2004/5, 2010/11, and 2015/16 HCES and WMS data, CSA, Ethiopia

In rural areas, agriculture remains to be the primary source of household income. More than 80% of households in rural areas are engaged in agriculture (farming crops or maintaining livestock). However, the contribution of agriculture declined from 88% in 2004/5 to 84% in 20015/16, showing a decline of 5.4%. The contribution of non-farming economic activities in rural areas (such as merchandise businesses, rental services and wage and salary employment), on the other hand, continued to increase from 8% in 2004/5 to 14% in 2015/6 (an increase of 66%) indicating a slow movement of the rural economy out of agriculture. A World Bank report on Ethiopian economic update (World Bank 2015), likewise, reveals a positive change in non-farming employment opportunities in Ethiopia that increased from 20% in 2003 to 23% in 2013.

Looking further into the sources of income of households across the urban hierarchies and gender of the head of the household, in the 2015/16 WMS, revealed some salient features (Table 13). Disaggregated data across the urban hierarchies revealed that the top three significant sources of income in big cities and medium-sized towns are wages and salaries, household business enterprise, and remittance. In small-sized towns, however, wages and salaries, household business enterprise, and agricultural production account to the top three sources of income of the households.

Household income from wage and salaries, formal businesses, and agricultural activities are significantly higher among male-headed households as compared to the female-headed households across all the urban hierarchies. Other miscellaneous income sources such as income from the informal business, remittance, pension, and other social security benefits, rental income, and income from other miscellaneous sources are significantly higher among female-headed households as compared with the male-headed ones.

Table 13: Percentage distribution of income sources according to the urban hierarchies and gender of the head of the household

Household income sources	Big cities			Medium-sized towns			Small-sized towns		
	Gender of the head of the household			Gender of the head of the household			Gender of the head of the household		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Wages and salaries	59.9%	43.4%	53.3%	53.8%	30.5%	44.7%	44.7%	28.2%	38.8%
Income from household business enterprise	26.0%	24.0%	25.2%	28.7%	32.4%	30.1%	27.9%	36.0%	30.8%
Formal	15.3%	9.1%	12.8%	14.6%	8.2%	12.1%	15.2%	7.7%	12.5%
Informal	10.7%	14.9%	12.5%	14.1%	24.2%	18.0%	12.8%	28.3%	18.3%
Income from own agricultural production	3.2%	1.4%	2.5%	9.0%	5.0%	7.5%	19.6%	11.0%	16.6%
Remittance	4.6%	18.5%	10.1%	4.0%	21.7%	10.9%	4.6%	15.0%	8.3%
Pension and other social security benefits	2.8%	3.9%	3.2%	1.8%	3.1%	2.3%	1.9%	3.5%	2.5%
Rent income	2.8%	6.9%	4.4%	1.7%	5.2%	3.1%	0.9%	4.2%	2.1%
Other sources of income	0.8%	2.0%	1.2%	0.9%	2.0%	1.4%	0.3%	2.2%	1.0%
n	7,158	4,729	11,887	2,388	1,533	3,921	2,484	1,367	3,851

Source: Author's calculation based on the 2015/16 WMS data, CSA, Ethiopia

Income received from remittance revealed a vast difference between male-headed and female-headed households across all the urban hierarchies. Female-headed households are highly likely to receive remittance. For instance, the percentage of male-headed households who received remittance in urban areas was in a range of about 4-5% while the percentage of female-headed households who received remittance was significantly high (19%, 22%, and 15% in big cities, medium-sized towns, and small-sized towns respectively).

Table 14: Household size, size and proportion of extended family members, and percentage of the gender of the head of the household by area of residence, household income source, and household expenditure quintile

Household income source	Household Size	The average size of the extended family members	Household structure		Gender of the head of the household		Total
			Extended	Nuclear	Male	Female	
Wage and salaries	3.6	0.5	33%	68%	70%	30%	10,311
Income from household enterprise	4.0	0.7	38%	62%	60%	40%	5,869
Income from agriculture	5.1	0.4	26%	74%	79%	21%	10,038
Remittance	3.0	0.9	50%	50%	27%	73%	2,143
Social security	3.8	0.8	46%	54%	49%	51%	652
Rent income	3.7	0.9	50%	50%	35%	65%	928
Other income sources	2.8	0.4	23%	78%	36%	64%	275
Total	4.1	0.6	33%	67%	66%	34%	30,216

Source: Author's calculation based on the 2015/16 WMS and HCES national survey data, CSA, Ethiopia

Other miscellaneous income sources such as social security benefits and rental income contribute more to female-headed households as compared to the male-headed ones. Agriculture as a source of income of urban households decreases with the level of urbanisation (3% in big cities, 8% in medium-sized towns and 17% in small-sized towns).

Household income source is related to family structure. According to the result of the analysis of the 2015/16 WMS (Table 14) households living with the income, they earn from remittance, social security, and rent have more number of extended family members as compared with those whose livelihood is based on income from other sources (salary, family business, or agriculture). It is likely that these households, living under economic stress, might opt to live with extended family members mainly sharing living costs. In traditional societies, the household head is responsible for the economic and social well-being of the household. According to the result, the gender of the head of the household determines how households earn their livelihood. For instance, less than one-third (30%) of the female-headed households earn their income from wage and salary in contrast with more than two-thirds (70%) of the male-headed households earning a regular salary. Female-headed households earn their income, mainly from remittance, social security, and rentals.

4.2.3 Household's Participation in Social Protection Programs

The national social protection policy of the government of the Federal Democratic Republic of Ethiopia (2014) segments societies that are vulnerable to different social and economic problems. The policy considers an array of social protection mechanisms such as safety net, asset building, and food aid. The 2010/11 and 2015/16 HCES asked questions to identify if the household has participated in any of these social protection programs. As revealed in the results, the percentages of households who earn income from social protection programs/projects (such as safety net, asset building, and food aid) were higher in rural areas (28% in 2010/11 and 23% in 2015/16). The percentage of the beneficiaries of social protection programs and projects in medium and small-sized towns was much lower (11% in 2010/11 and 8% in 2015/16), and social protection services were almost non-existent to urban households in big cities during these periods (3% in 2010/11 and 1% in 2015/16).

According to the results, social protection programs such as safety net programs in Ethiopia during the past decade were rural-focused (Coll-Black 2015, Dube & Ozkan 2018). The outcome of social protection services across time (Table 15) has also revealed that the percentage of households utilizing the service has consistently declined between 2010/11 and 2015/16 across the urban hierarchies (2.9% to 1.3% in big cities, 10.9% to 7.6% in medium and small-sized towns, and 27.6% to 22.7% in rural areas).

Very few (about 2%) of the households in Ethiopia benefit from the pension scheme, and those beneficiary households of the pension scheme are mostly residents of urban areas. The contributory pension scheme in Ethiopia provides benefits in old age (60 years) that covers employees of public and private enterprises, armed forces, the police and their survivors.

Table 15: Percentage of household who participated in social protection programs according to year and gender of the head of the household, and place of residence

	Gender of the head of the household		Big cities		Medium and small-sized towns		Rural		Total	
			2010/11	2015/16	2010/11	2015/16	2010/11	2015/16	2010/11	2015/16
Households who ever participated in social protection programs/projects (such as safety net, asset building, food aid and the likes)	Male	%	2.8%	1.2%	9.0%	5.4%	26.2%	21.0%	14.6%	10.1%
		n	5,196	7,158	5,032	4,872	7,793	7,997	18,021	20,027
	Female	%	3.2%	1.5%	14.5%	11.4%	32.4%	28.0%	14.9%	11.0%
		n	3,238	4,729	2,739	2,900	2,217	2,560	8,194	10,189
	Total	%	2.9%	1.3%	10.9%	7.6%	27.6%	22.7%	14.7%	10.4%
		n	8,434	11,887	7,771	7,772	10,010	10,557	26,215	30,216
Households whose source of income was from the pension, provident fund and the likes	Male	%	3.9%	2.6%	1.8%	1.6%	0.2%	0.0%	1.7%	1.3%
		n	5,196	7,158	5,032	4,872	7,793	7,997	18,021	20,027
	Female	%	5.8%	3.6%	3.5%	1.7%	0.5%	0.1%	3.6%	2.2%
		n	3,238	4,729	2,739	2,900	2,217	2,560	8,194	10,189
	Total	%	4.6%	3.0%	2.4%	1.6%	0.2%	0.1%	2.3%	1.6%
		n	8,434	11,887	7,771	7,772	10,010	10,557	26,215	30,216

Source: Author's calculation based on the 2015/16 WMS data, CSA, Ethiopia

Even though women are globally disadvantaged in social protection systems, experiencing lower coverage rates and lower benefit levels (UN-Women 2015:15) evidence in many African countries including Ethiopia shows the gender dimension of social protection has received attention and many of the social protection programs were found to be gender-sensitive (Tebaldi 2016). The result of the national surveys also revealed that irrespective of the place of residence and time social protection services (including pensions) was provided predominantly to female-headed households as compared with households headed by males

(Table 15). The finding, in this regard, indicates a positive response to the objectives and principles of the country's National Social Protection Policy (2014). The objective of the policy is to protect poor and vulnerable individuals, households, and communities from the adverse effects of shocks and destitution. The principle for social protection, as outlined in the policy document, illustrates the need for gender-focused mainstreamed affirmative action to empower women.

4.2.4 Household's Involvement in Micro and Small Business Activities

Micro and Small Enterprise (MSE) development strategy is described in the *Micro and Small Enterprise Development Policy and Strategy* (Ministry of Urban Development and Housing 2016) as an essential vehicle to address the challenges of an unemployed segment of the population through the creation of their businesses. According to the Micro and Small Enterprise Development Policy and Strategy (Ministry of Urban Development and Housing 2016) micro-enterprises in Ethiopia are defined as economic undertakings employing up to five persons including the enterprise owners and family members, with total assets of not more than USD 4,630. The small business refers to those enterprises employing 6-30 persons and with total assets ranging from USD 4,630 up to USD 69,500. There is also evidence showing the role that urban informal sector plays in the economy of low-income households in Ethiopia, though they are not yet integrated with the formal sector of the overall development effort (Desta 2018). Analysis of the 2010/11 and 2015/16 national survey revealed useful data about households whose members entered a new business or utilized credit facilities and entered membership of micro and small business cooperatives.

According to the result (Table 16), the percentage of households who started own business and got credit facility from microfinance institutions or joined cooperative to operate in the

micro and small business enterprise has declined nearly by half (11.7% to 7.6%) between 2010/11 and 2015/16.

Table 16: Percentage of household who participated in micro and small business initiatives according to the gender of the head of the household, urban hierarchies and year

	Gender of the head of the household		Big cities		Medium and small-sized towns		Rural		Total	
			2010/11	2015/16	2010/11	2015/16	2010/11	2015/16	2010/11	2015/16
Households who started own business, or got credit facility from microfinance institutions, or joined a cooperative to operate in the micro and small business enterprise over the past year	Male	%	10.2%	5.7%	13.7%	9.8%	13.0%	9.2%	12.4%	8.1%
		n	5,196	7,158	5,032	4,872	7,793	7,997	18,021	20,027
	Female	%	10.6%	5.8%	11.7%	8.3%	8.4%	5.9%	10.4%	6.5%
		n	3,238	4,729	2,739	2,900	2,217	2,560	8,194	10,189
	Total	%	10.3%	5.7%	13.0%	9.2%	12.0%	8.4%	11.7%	7.6%
		n	8,434	11,887	7,771	7,772	10,010	10,557	26,215	30,216

Source: Author's calculation based on the 2015/16 WMS data, CSA, Ethiopia

The decline is witnessed in big cities (10.3% to 5.7%), in medium and small-sized towns (13% to 9.2%), and rural areas (12% to 8.4%). Household's engagement in business activities in urban areas shows no significant difference between male and female heads of the household. However, male-headed households' involvement in business activities seems higher in rural areas. The World Bank's enterprise survey finding (World Bank 2015) might give the possible explanation for the decline that 41 per cent of micro-businesses, 36 per cent of small businesses, and 29 per cent of medium businesses in Ethiopia have challenges to access a financial loan. These figures are very high as compared to the average of 24 per cent, 20 per cent and 16 per cent of such enterprises failing to get access to a financial loan in SSA respectively. Alibhai et al. (2018) have also revealed that Ethiopian banks are primarily asset-based, sometimes requiring collateral worth three times the value of a loan that deters credit access to the urban poor.

4.3 Food Security Measures/Indicators

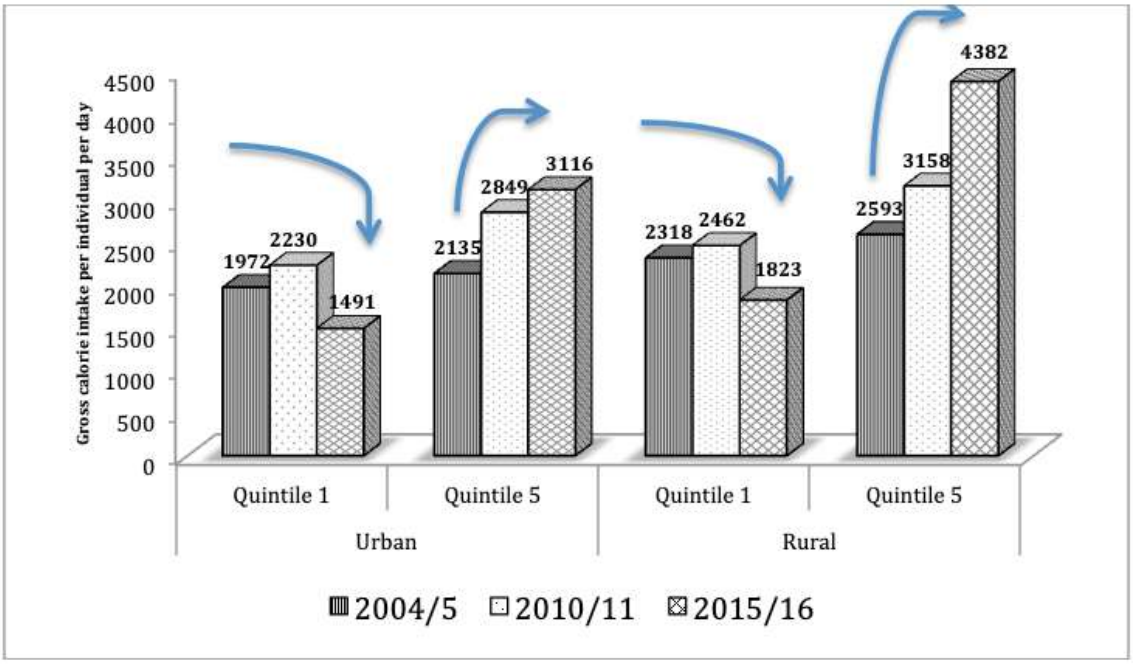
The definition of food security entails the availability and access of enough food, both quantity and quality needed for good health, always for all people to ensure an active and

healthy life. For this research, food security indicators are estimated at the household level. As there is no single measurement to capture the different dimensions of food security, FAO (2013) recommends the use of a combination of indicators. Application of different indicators improves accuracy, specificity, and precision of food security measures.

In this research, household food security measures were estimated based on the secondary data from the three rounds of the HCES and WMS of 2004/5, 2010/11, and 2015/16. The analysis used three of the commonly used measures of household food security: a measure of calorie intake per person per day and two of the experiential measures - Food Consumption Score (FCS) and Coping Strategy Index (SCI). All the three HCESs provided data for estimation of calorie intake per person per day. Data for estimation of FCS was only collected in the 2010/11 and 2015/16 WMS. Data for estimation of CSI was only collected in the 2015/16 WMS. The following subsections provide a separate analysis of these food security measures.

4.3.1 Calorie Intake

Food consumption measured in kilocalories is often considered to be the gold standard for measuring food security (WFP 2008). According to the HCES, the calorie intake per individual per day steadily improved over the period between 2004/5 and 2015/16. Calorie intake per person per day has increased over time: 2219 kilocalories in 2004/5, 2637 kilocalories in 2010/11, and 2724 kilocalories in 2015/16. The coefficient of variation (CV) of calorie intake during these periods was 43%, 50%, and 41% in 2004/5, 2010/11, and 2015/16, respectively. The higher percentage of the CV implies a higher dispersion of calorie intake, implying that households in Ethiopia do not equally enjoy the progress observed in aggregate throughout this analysis.



Source: Author's calculation based on the HCES national survey data 2004/5, 2010/11 and 2015/16, CSA, Ethiopia

Figure 10: Gross calorie intake per person per day by year, place of residence, and expenditure quintile

The calorie intake per person per day among households in the lowest quintile (quintile 1) has a decreasing trend through the period below the recommended minimum standard of 2100 kilocalories per person/per day (WHO & UNICEF 2004) while it continued to improve for the households in the upper quintile (quintile 5). As revealed in Figure 10, the calorie intake per person per day, between urban and rural households, in the lowest quintile (quintile 1) has a decrease of 24% and 21% between 2004/5 and 2015/6 respectively. On the other hand, the gross daily calorie intake of households in the upper quintile (quintile 5) has dramatically increased through the analysis period (a relative increase of 46% and 69% in urban and rural areas respectively between 2004/5 and 2015/6). A significant difference in calorie intake has also been witnessed between male-headed and female-headed households during the three periods. As shown in Table 17, the average calorie intake per person per day was higher in female-headed households in 2004/5 and 2015/16, while the difference between the two in 2010/11 was not statistically significant.

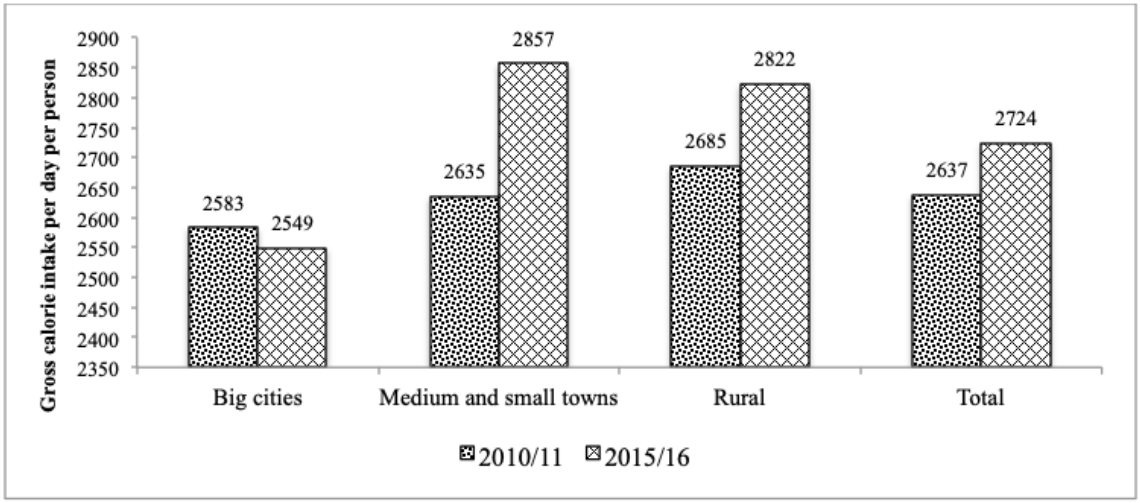
Table 17: Gross calorie intake per person per day across gender of the head of the household and year

	Male-headed	Female-headed	Total
2004/5	2202_a	2257_b	2219
2010/11	2644_a	2622_a	2637
2015/16	2670_a	2831_b	2724

Note: Values in the same row and not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.

Source: Author's calculation based on the HCES national survey data 2004/5, 2010/11 and 2015/16, CSA, Ethiopia

Calorie intake appeared to vary across urban hierarchies and between the survey periods (Figure 11). On the one hand, calorie intake per person per day, among households in big cities, is lowest when compared to the calorie intake among households in small and medium-sized towns and rural areas during both the 2010/11 and 2015/16 national surveys. On the other hand, calorie intake has significantly improved between 2010/11 and 2015/16 in medium and small-sized towns and rural areas. The change in calorie intake per person per day is statistically significant at a country level ($p < .05$), in small and medium-sized towns ($p < .05$), and in rural areas ($p < .05$) between the two periods. Calorie intake in big cities between the two periods shows no change (Figure 11).



Source: Author's calculation based on the HCES data of 2010/11 and 2015/16, CSA, Ethiopia

Figure 11: Gross calorie intake per person per day across the urban hierarchy

Further analysis of the 2015/16 HCES and WMS shows a noticeable variation in calorie intake across demographic and socio-economic variables such as household structure, headship status, and participation of households in micro and small businesses (Table 18).

Table 18: Gross calorie intake per person per day by gender of the household head, extended family structure, household's participation in social protection programs, and household businesses

Place of residence	Gender of the head of the household		Household structure		Did the household participate in social protection		Did any member of the household participate in micro and small business services over the past year?	
	Male	Female	Extended	Nuclear	Yes	No	Yes	No
Big cities	2510_{a}	2609_{b}	2338_{a}	2701_{b}	2523_{a}	2551_{a}	2522_{a}	2551_{a}
Medium &small-sized towns	2803_{a}	2948_{b}	2592_{a}	2979_{b}	2647_{a}	2878_{b}	2787_{a}	2864_{a}
Rural	2731_{a}	3108_{b}	2799_{a}	2830_{a}	2501_{a}	2917_{b}	2736_{a}	2830_{b}
Total	2670	2831	2522	2825	2533	2750	2689	2727

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.

Source: Author's calculation based on the HCES national survey data of 2015/16, CSA, Ethiopia

Calorie intake per person per day among female-headed households in big cities, medium and small-sized towns, and in rural areas is consistently higher as compared with the corresponding figures among male-headed households, and the difference is statistically significant at 95% confidence level. This finding might be a result of women's spending patterns having a positive effect on the welfare of the household, especially in food security. Studies in other countries (Felker-Kantor & Wood 2012; Bovine& Gupta 1997; Quisumbing et al. 1996) have shown that women tend to spend their income on food for the family than men, which could have a positive effect on food security of the household.

As shown earlier (section 4.1), 42% of the households in big towns, 32% in medium and small-sized towns, and 25% in rural areas live with members of an extended family. The percentage of households with extended family members is significantly higher among female-headed households compared with the proportion of extended family structure in male-headed households (47% versus 38% in big cities, 36% versus 29% in medium and small-sized towns, and 40% versus 30% in rural areas for female-headed and male-headed households respectively). Looking into the difference in calorie intake between households with and without extended family members revealed that in urban areas households with extended family members, in general, have a significantly lower calorie intake as compared with households with nuclear family structure (Table 18). This finding is further discussed

along with other food security measures in Section 4.3.5. In rural areas, however, the difference in calorie intake by household structure is not significant in statistical terms.

The results from the analysis of the 2015/16 HCES revealed that households involved in social security and food aid programs at both urban and rural areas, in general, have significantly lower calorie intake as compared with non-beneficiary households. The finding justifies that the social protection programme targeted to the most vulnerable households in Ethiopia is yet far from addressing the food insecurity situation of households. The reasons could be that most of the support is provided on an emergency basis, and that might not have been able to change the livelihoods to address the food insecurity situation of households on a sustainable basis.

Table 19: Gross calorie intake per person per day according to the source of income and urban hierarchies

Household income source	Big cities		Medium-sized towns		Small-sized towns		Rural		Total	
	Kcal	n	Kcal	n	Kcal	n	Kcal	n	Kcal	n
Wage and salaries	2570	6,339	2857	1,752	3006	1,495	3044	725	2715	10,311
Income from household enterprise	2475	2,994	2752	1,182	2802	1,185	2902	508	2634	5,869
Income from agriculture	2364	294	2787	293	2780	638	2806	8,813	2790	10,038
Remittance	2708	1,204	3077	429	2949	320	3082	190	2851	2,143
Social security	2537	380	2649	91	2415	96	2443	85	2523	652
Rent income	2466	528	2681	121	2726	79	2501	200	2524	928
Other income sources	2586	148	2922	53	2918	38	2688	36	2710	275
Total	2,549	11,887	2,835	3,921	2,880	3,851	2,822	10,557	2,724	30,216

Source: Author's calculation based on the WMS data of 2015/16, CSA, Ethiopia

The Poverty Reduction Strategy of Ethiopia has provided a framework stipulating promotion of micro and small enterprise with the provision of access to credit and business development services. According to the 2015/16 WMS result households, involvement in micro and small businesses in urban areas could not produce sufficient evidence to show improvement in calorie intake among households participating in micro and small business development programs. In rural areas, however, households with their members involved in micro and small business development programme have revealed a significant improvement in calorie intake. The poverty reduction policy of Ethiopia recognizes informal social support systems,

including a wide range of support mechanisms within the extended family structure as a basis for the social protection system in the country.

Results obtained from a descriptive analysis of the 2015/16 WMS (Table 19) indicated that remittance plays an essential role in improving the food security status of households. Households receiving remittance have the highest calorie intake across all categories of urban hierarchies, followed by households earning their income from wage and salaries compared with households earning income from any other sources. On the other hand, households earning income from sources such as social security services and rent income had the lowest calorie intake across all the hierarchies.

A study that examines the association between food security and receiving remittances based on a survey of 68,463 individuals in more than 60 countries in the global south found a significant association between receiving remittances and food security (Ebadi et al. 2018). A recent study on the impact of remittances on household food security in Tigray region of Ethiopia has also similarly shown better coping and food access among households with access to remittances, as compared to households without remittance income (Abadi et al. 2018).

As discussed in the previous section, the food expenditure of both male- and female-headed households increases with the level of urbanisation. However, as revealed in Table 20, the average food expenditure among male-headed households across all urban hierarchies (big cities, medium-sized towns, and small-sized towns) is consistently higher than food expenditure among female-headed households. The difference is statistically significant at 95% confidence level. In rural areas, however, both food and non-food expenditure are high among female-headed households.

Conversely, the calorie intake of female-headed households is consistently higher than male-headed households across all urban hierarchies and in rural areas. Male-headed household's spending more on food is likely eaten in hotels, and restaurants (outside of the household cooking arrangement) than female-headed households could be the possible explanation for the increase in food expenditure among male-headed households.

Table 20: Gross calorie intake per person per day, food expenditure and non-food expenditure per person per year according to the place of residence and gender of the head of the household

Area of Residence	Gross calorie intake, food expenditure, and non-food expenditure	Male-headed households	Female-headed households	Total
Big cities	Gross calorie intake per person per day (kilocalories)	2,510$_a$	2,609$_b$	2,549
	Food expenditure per person per year (ETB)	10,208$_a$	9,179$_b$	9,798
	Non-food expenditure per person per year (ETB)	12,695$_a$	11,187$_b$	12,095
Medium-sized towns	Gross calorie intake per person per day (kilocalories)	2,766a	2,942b	2,835
	Food expenditure per person per year (ETB)	9,896$_a$	9,320$_b$	9,671
	Non-food expenditure per person per year (ETB)	10,859a	9,712b	10,411
Small-sized towns	Gross calorie intake per person per day (kilocalories)	2,839a	2,953b	2,880
	Food expenditure per person per year (ETB)	8,952$_a$	8,138$_b$	8,663
	Non-food expenditure per person per year (ETB)	10,466a	7,405b	9,380
Rural	Gross calorie intake per person per day (kilocalories)	2,731a	3,108b	2,822
	Food expenditure per person per year (ETB)	5,328$_a$	6,457$_b$	5,602
	Non-food expenditure per person per year (ETB)	4,311a	4,680b	4,401
Total	Gross calorie intake per person per day (kilocalories)	2,670	2,831	2,724
	Food expenditure per person per year (ETB)	8,066	8,376	8,171
	Non-food expenditure per person per year (ETB)	8,852	8,823	8,842

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.

Source: Author's calculation based on the HCES national survey data of 2015/16, CSA, Ethiopia

Based on calorie intake per person per day (which is a scale data) households were grouped into three categories to facilitate analysis along with the other measures of food security. The procedure used in this regard involves cutting the percentile points into three equal groups where the cut-off point for the lowest third (33.33% of the households) is 2201 kilocalories, and the cut-off point for the upper third (66.66% of the households) is 2863 kilocalories. Households are classified into three categories, as follows:

- Below 2201 kilocalories low-calorie intake
- 2201-2863 kilocalories medium calorie intake
- 2863 and above kilocalories high-calorie intake

Household's calorie intake is related to the gender of the head of the household, household structure, area of residence, expenditure quintile, and participation of households in social protection programs. According to the result (Table 21) a higher percentage of male-headed households than female-headed ones, households with an extended family structure than those households with nuclear family structure, and households benefiting social protection programs than non-beneficiary households in the programme are classified as getting low calories.

Table 21: Households classified by categories of calorie intake and household background characteristics

Background characteristics		Classification of households by the quantity of calorie intake			n
		Low	Medium	High	
Gender of the head of the household	Male	34.5%	34.0%	31.5%	20,027
	Female	31.0%	32.0%	37.0%	10,189
Household structure	Extended family	38.4%	37.1%	24.5%	10,078
	Nuclear family	30.8%	31.5%	37.7%	20,138
Area of residence	Big cities	34.4%	39.3%	26.2%	11,904
	Medium-sized towns	26.0%	35.4%	38.6%	3,914
	Small-sized towns	29.9%	29.0%	41.0%	3,851
	Rural	36.1%	27.4%	36.6%	10,547
Expenditure quintile	Quintile 1	81.9%	13.7%	4.4%	3,661
	Quintile 2	55.3%	32.8%	11.9%	4,226
	Quintile 3	36.3%	39.5%	24.1%	4,587
	Quintile 4	25.6%	39.9%	34.6%	6,497
	Quintile 5	12.5%	33.6%	53.9%	11,245
Participate in the household in business development services	Yes	34.4%	33.0%	32.6%	2,286
	No	33.2%	33.4%	33.4%	27,930
Participation of households in social protection programs and projects	Yes	42.8%	29.1%	28.1%	3,624
	No	32.0%	33.9%	34.0%	26,592
	Total	33.3%	33.3%	33.3%	30,216

Source: Author's calculation based on the HCES national survey data of 2015/16, CSA, Ethiopia

Concerning expenditure quintile, the vast majority of households in the lowest quintile (81.9% in quintile 1) are classified as getting low calories while very few households in the upper quintile (12.5% in quintile 5) are categorized as getting low calories. The calorie intake revealed no significant difference across the lines of household's participation in business development.

4.3.2 Food Consumption Score (FCS)

FCS is the main indicator used by WFP to measure the access component of food security and is a proxy indicator for the quantity and quality of food. FCS is a composite score calculated using the frequency of the household's consumption of eight food groups during the seven days before the survey (WFP 2008:20). The FCS thresholds classifying households as having poor, borderline or acceptable food consumption underestimates inadequate consumption (Lovon & Mathiassen 2014). As a result, the FCS estimates in this section are presented as a point estimate to show how it varies across different contexts while FCS thresholds are used in Section 4.3.4 in conjunction with rCSI to optimize its limitation. Foods were regrouped into eight standard food groups for conducting the estimation of the FCS (Table 22). The consumption frequencies of the food items belonging to each group were then summed. Any summed food group frequency value over seven was recorded (truncated) as 7. Each food group was assigned a weight, reflecting its nutrient density (WFP 2008). According to the classification, groups rich in proteins (animal protein foods) have the highest weight of 4 while food groups with few micronutrients have the lowest. Multiplying each food group frequency by each food group weight and then summing these scores into one composite score gives the FCS.

Table 22: The FCS food groups, weights and justification for the weights

Food group	Weight	Justification for weights
1. Main staples (cereals, starchy tubers and roots)	2	Energy-dense, usually eaten in large quantities. Protein content lower and more inferior quality than legumes, micronutrients bound by phytates
2. Pulses (legumes and nuts)	3	Energy-dense, high amount of protein content but lower quality than animal protein, micronutrients bound by phytates, low fat
3. Animal protein (meat, fish and eggs)	4	Highest quality protein, micronutrients, vitamin A, energy phytates, energy-dense. Even when consumed in small quantities, improvements to the quality of the diet are large
4. Vegetables	1	Low energy, low protein, no fat, micronutrients
5. Fruits	1	Low energy, low protein, no fat, micronutrients

Food group	Weight	Justification for weights
6. Milk and dairy products	4	Highest quality protein, micronutrients, Vitamin A, energy
7. Oils and fats	0.5	Energy-dense but usually no other micronutrients
8. Sugar/sweets	0.5	Empty calories
9. Condiments	0	By definition eaten in minimal quantities, not considered to have an impact on overall diet

Source: extracted from page 20 of the World Food Programme (2008)

The result presented in Table 23 showed that FCS is significantly lower among female-headed households across all the background characteristics of the households such as the area of residence, expenditure quintile, household participation in micro and small business activities, and social protection programs. Similarly, FCS is significantly higher among households with extended family structures across all the background characteristics.

Table 23: FCS score according to the gender of the head of the household and household structure

	Gender of the head of the household			Household structure		
	Male	Female	Total	Extended	Nuclear	Total
Area of Residence						
Big cities	53.2$_a$	50.0$_b$	52.0	53.7$_a$	50.7$_b$	52.0
Medium-sized towns	54.7$_a$	51.3$_b$	53.5	56.4$_a$	52.0$_b$	53.5
Small-sized towns	51.3$_a$	46.9$_b$	49.8	51.7$_a$	49.0$_b$	49.8
Rural	46.4$_a$	43.6$_b$	45.8	46.2$_a$	45.7$_a$	45.8
Total	50.6	48.3	49.8	51.9	48.8	49.8
Expenditure Quintile						
Quintile 1	43.2$_a$	42.6$_a$	43.0	44.5$_a$	42.4$_b$	43.0
Quintile 2	45.2$_a$	44.1$_a$	44.9	46.1$_a$	44.3$_b$	44.9
Quintile 3	48.1$_a$	45.4$_b$	47.2	48.2$_a$	46.7$_b$	47.2
Quintile 4	51.0$_a$	47.4$_b$	49.7	51.5$_a$	48.6$_b$	49.7
Quintile 5	56.1$_a$	52.1$_b$	54.6	57.9$_a$	53.1$_b$	54.6
Total	50.6	48.3	49.8	51.9	48.8	49.8
Did any member of the household participate in micro and small business support services over the past year?						
Yes	50.6$_a$	51.2$_a$	50.7	53.7$_a$	49.1$_b$	50.7
No	50.6$_a$	48.2$_b$	49.8	51.8$_a$	48.7$_b$	49.8
Total	50.6	48.3	49.8	51.9	48.8	49.8
Did the household participate in social protection programs?						
Yes	48.7$_a$	47.3$_b$	48.2	49.7$_a$	47.6$_b$	48.2
No	50.8$_a$	48.4$_b$	50.0	52.1$_a$	48.9$_b$	50.0
Total	50.6	48.3	49.8	51.9	48.8	49.8

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.

Source: Author's calculation based on the HCES data of 2015/16, CSA, Ethiopia

The cut off to identify households with poor, borderline, and acceptable food consumption group were set according to WFP guideline (2008). According to the guideline:

> *A score of 28 is the minimum with a score below 28, reflecting a household that is not expected even to eat staples and vegetables daily and therefore*

was considered to have poor food consumption. Households with scores between 28 and 42 were assessed as being in borderline food consumption group, as a score of 42 reflects a household with daily staple and vegetable consumption as well as oil and pulses four times a week, which is considered a minimum for an adequate diet. A score above 42 is the acceptable range of food consumption group. (WFP 2008:9).

The overall result (Table 24) revealed that one-fifth of the households (20.6%) were in the range of poor and borderline food consumption in 2010/11, which gets worse in 2015/16 and about one-third of the households (32.1%) in 2015/16 were below an acceptable range of food consumption.

The overall percentage of households in the acceptable range of food consumption in 2015/16 has shown a relative decrease of -14% compared to 2010/11. As expected, households spending more do have higher food consumption score. The result clearly shows that food consumption is a function of household expenditure quintile.

Table 24: Household FCS in Ethiopia by expenditure quintile and year

Expenditure Quintile	2010/11				2015/16				Relative change in the percentage of acceptable food consumption between 2010/11 and 2015/16
	Poor	Borderline	Acceptable	n	Poor	Borderline	Acceptable	n	
Quintile 1	11.4%	19.6%	68.9%	5,252	19.3%	25.8%	54.9%	2,945	-20%
Quintile 2	7.1%	16.5%	76.4%	5,208	15.4%	27.1%	57.5%	3,605	-25%
Quintile 3	5.5%	14.9%	79.6%	5,249	11.4%	24.7%	63.9%	4,020	-20%
Quintile 4	4.3%	12.3%	83.3%	5,247	8.8%	23.4%	67.8%	5,777	-19%
Quintile 5	2.0%	9.3%	88.7%	5,259	4.8%	18.5%	76.8%	10,263	-13%
Total	6.1%	14.5%	79.4%	26,215	9.7%	22.5%	67.9%	26,610	-14%

Source: Author's calculation based on the HCES data of 2010/11 and 2015/16, CSA, Ethiopia

Contrary to the higher calorie intake per person per day among rural households (section 4.3.1), FCS score was the lowest in rural areas in comparison to the urban areas (small-sized towns, medium-sized towns, and big cities). The reason could be that rural household's food consumption is dependent on local production, which in most cases is dominated by fewer items produced in their area while urban households have better access, as they are dependent on the market with food items coming from different sources.

4.3.3 Food Insecurity Coping Strategy Index (CSI)

CSI is a method developed by Maxwell and Caldwell (2008) that denote reactions that households make when they encounter food insecurity and the action that they take to mitigate the problem. The CSI estimates the frequency of occurrence of increasingly severe coping strategies. The index was initially used to make a comparison of the coping behaviours over time. While some scholars (Leroy et al. 2015) do not suggest CSI for assessing the access dimension of food insecurity, the World Food Programme and other development organisations widely used CSI as a proxy indicator for measuring access to food. In this study, CSI is used as a measure to the level of household stress to cope with food access insecurity as the other indicators (calorie intake and FCS) measure the quantity and quality aspect of food insecurity.

The CSI was initially developed to capture the nature and magnitude of the relative severity of household food insecurity in a given context. The original version of CSI (context-specific CSI) uses a set of coping strategies that are useful to understand food security situations in a specific geographic location. In which case, the relative severity of individual behaviours varies from location to location. Maxwell and Caldwell (2008) reduced the context-specific CSI to a simple set of behaviours that are universal and developed to be used to compare the coping behaviour of food insecurity across different contexts. Accordingly, the 2015/16 WMS of Ethiopia collected data on the coping strategies for the analysis of rCSI. The rCSI in this study is calculated based on a specific set of behaviours, each with its universal severity weighting. The five standard coping strategies and their severity weightings are:

> *Eating less preferred/expensive foods (1.0); borrowing food or relying on help from friends and relatives (2.0); limiting portion sizes at mealtimes (1.0);*

limiting adult intake so that small children can eat (3.0) and reducing the number of meals per day (1.0). Maxwell and Caldwell (2008:17)

Answers to the simple question *"In the past seven days, if there have been times when you did not have enough food or enough money to buy food, how many days has your household had to adopt a particular food-based the coping strategy"* are used to create the reduced rCSI. For each household, a score is given to each coping strategy. The rCSI score is a product of the frequency with which coping strategy is used and the weight of the severity. The scores for each coping strategy are added together to give a composite score for each household. Higher values of the index indicate more severe food insecurity. The possible lowest and the highest score of rCSI for a given household is between 0 (if none of the coping mechanisms was applied) and 56 (if all the coping mechanisms were applied for seven days). There are no universal thresholds for rCSI. However, the higher the rCSI score indicates more severe coping behaviour the household applied.

The scores are scale measures that can be used as a continuous variable or can also be categorized into groups of households with different levels of coping behaviours. The results of the rCSI are useful in comparing the severity of the household coping mechanisms across the study areas (big cities, medium-sized towns, small-sized towns, and rural areas). Maxwell et al. (2013) classified rCSI scores into three groups setting a threshold to rank coping severity (rCSI= 0–2 as *'no or low coping strategies'*, rCSI = 3–12 as *'medium coping actions'*, and rCSI ≥13 as *'high coping strategies'*) to explain the household coping strategies in Tigray region of Ethiopia. The classification, however, varies slightly in other studies elsewhere. For instance, the guidance note on the calculation of food security outcome indicators in vulnerability analysis and mapping in Afghanistan WFP (2012) suggests the ranges to be: no or low coping (rCSI= 0-3), medium coping (rCSI = 4-9), high coping (rCSI ≥10).

The 2015/16 WMS of Ethiopia collected household data from those who adopted food-based coping strategies to cope with a shortage of food or money to buy food. The result of each of the five strategies is presented in Table 25. Accordingly, it was revealed that households in big cities adopt strategies such as relying on less preferred and less expensive food, limiting portion size of meals, and reducing the number of meals eaten in a day as compared with households in medium and small-sized towns and rural areas. Households in rural areas and small-sized towns have a tradition of borrowing food or relying on help from friends or relatives, which is less practised in medium and big cities. The result here indicates the significance of social ties in a traditional setting in coping with food insecurity, which is very low or non-existent in big cities in most cases. The other noteworthy result is that higher percentages of female-headed households, households with nuclear family structure, and households in lower quintile adopt most of the standard coping strategies than the male-headed households, households with an extended family structure, and households in the higher quintile respectively. The result, in general, revealed the economic vulnerability of female-headed households and the decisive role of extended family structure in coping with food insecurity.

The CSI score is computed based on the reported frequency of the standard coping strategies, their severity weightings, and following the procedures outlined in Maxwell and Caldwell (2008). In this study, the rCSI score is computed only for households who opted to implement some form of coping strategies. The result of the rCSI score by gender of the head of the household, household structure, and area of residence according to expenditure quintile and household income source is shown in Table 23.

According to the result, higher rCSI is revealed among female-headed households compared with their male counterparts (10.4 male-headed versus 12.6 for female-headed). The

difference in rCSI scores between male-headed and female-headed households is consistent across all the expenditure quintiles and among households with different income sources. The difference in rCSI scores across gender of the head of the household is, however, statistically significant only among households in the lowest and the highest quintiles. Concerning income sources, rCSI score is significantly higher among households earning income from salaries and household business enterprises.

Table 25: Percentage of the households adopting the standard coping strategies by background characteristics

	Relied on less preferred, less expensive food		Borrowed food, or relied on help from friends or relatives		The limited portion size of meals		Limiting adult intake so that young children can eat		Reduce the number of meals eaten in a day	
	%	n	%	n	%	n	%	n	%	n
Area of Residence										
Big cities	33.6%	806	15.0%	729	35.4%	786	12.5%	735	43.1%	904
Medium-sized towns	27.6%	689	15.7%	667	25.8%	685	12.7%	664	27.0%	700
Small-sized towns	38.2%	495	19.8%	485	28.4%	493	17.9%	486	27.6%	507
Rural	30.0%	1884	21.8%	1832	25.4%	1829	13.0%	1787	23.6%	1857
Gender of the head of the household										
Male	28.1%	2391	16.6%	2275	23.9%	2311	12.5%	2263	26.2%	2434
Female	36.7%	1483	23.1%	1438	34.1%	1482	15.1%	1409	33.9%	1534
Household structure										
Extended	29.6%	1054	16.7%	1024	26.00%	1047	12.50%	1012	29.00%	1108
Nuclear	32.0%	2820	20.0%	2689	28.7%	2746	13.9%	2660	29.2%	2860
Expenditure Quintile										
Quintile 1	46.1%	764	29.5%	740	43.6%	766	25.1%	733	40.1%	775
Quintile 2	35.5%	677	23.1%	654	32.6%	660	17.0%	636	28.9%	665
Quintile 3	34.5%	612	20.2%	580	31.2%	590	13.9%	576	33.4%	623
Quintile 4	26.9%	772	16.6%	735	22.7%	761	10.1%	735	26.4%	808
Quintile 5	19.4%	1049	10.2%	1004	15.1%	1016	4.9%	992	21.2%	1097
Total	31.40%	3874	19.10%	3713	27.9%	3793	13.5%	3672	29.2%	3968

Source: Author's calculation based on the WMS data 2015/16, CSA, Ethiopia

The household structure is also a factor that contributed to the disparity in the rCSI score (10.4 among extended families and 11.8 among nuclear families). The rCSI score is consistently higher among nuclear families across all the expenditure quintiles and among households earning their income from different sources. However, the difference in rCSI score is statistically significant among households in the highest quintile (6.3 versus 8.8 between extended and nuclear families, respectively). Concerning income sources, female-headed households, in general, have a higher rCSI score across all sources of household

income as compared with the male-headed ones. In statistical terms, however, the difference in rCSI score across gender of the head of the household is significant only among those earning income from wage/salaries and household business enterprises.

Table 26: The rCSI scores by gender of the head of the household and household structure according to expenditure quintile and household income source

	Gender of the head of the household		Household structure		Total
	Male	Female	Extended	Nuclear	
Expenditure Quintile					
Quintile 1	12.5$_a$	16.1$_b$	13.5$_a$	13.9$_a$	13.8
Quintile 2	11.2$_a$	13.4$_a$	11.0$_a$	12.6$_a$	12.1
Quintile 3	10.4$_a$	12.3$_a$	10.1$_a$	11.7$_a$	11.3
Quintile 4	9.2$_a$	12.0$_b$	9.1$_a$	11.3$_a$	10.6
Quintile 5	7.3$_a$	9.3$_b$	6.3$_a$	8.8$_b$	8.3
Household income source					
Wage and salaries	9.3$_a$	11.3$_b$	9.0$_a$	10.5$_a$	10.1
Income from household enterprise	8.5$_a$	11.5$_b$	8.2$_a$	11.3$_b$	10.3
Income from own agriculture	11.3$_a$	12.0$_a$	11.0$_a$	11.7$_a$	11.5
Remittance	8.2$_a$	12.1$_a$	13.9$_a$	9.5$_a$	11.3
Social security	11.1$_a$	16.2$_a$	12.6$_a$	15.1$_a$	14.5
Rent income	11.3$_a$	15.7$_a$	10.4$_a$	17.4$_a$	14.6
Other income sources	22.2$_a$	21.3$_a$	23.7$_a$	21.2$_a$	21.5
Total	10.4	12.6	10.4	11.8	11.4

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.
Source: Author's calculation based on the WMS data 2015/16, CSA, Ethiopia

Adopting a similar procedure with the analysis of the household coping strategies in the Tigray region of Ethiopia by Maxwell et al. (2013), the overall result in this study (Table 27) revealed that, households who opted to implement some form of coping strategies, 23.3% reported low coping, 44.1per cent medium coping, while 32.6per cent has high or distress coping mechanisms. As revealed in Table 27, the degree of distress coping varies significantly across gender of the head (28.2% male-headed versus 38.2% female-headed, respectively), expenditure quintile (39.3% lowest quintile versus 23.1% highest quintile), household structure (28.8% extended versus 34.1%, nuclear). There was also a significant difference between households with and without micro and small business support services (23.2% versus 33 .5%, respectively), and between households with and without social protections support (37.6% versus 31.0%, respectively).

According to the finding from the 2015/16 national survey, female-headed households, households in the lowest quintile, nuclear families, households with low access to micro and small business support services, and households receiving social protections support have distress coping strategy in addressing food insecurity.

Table 27: The rCSI Categories by selected socio-demographic characteristics of households

	Low coping	Medium coping	High/distress coping	N
Gender of the head of the household				
Male	25.0%	46.8%	28.2%	1020
Female	21.1%	40.7%	38.2%	809
Expenditure Quintile				
Quintile 1	15.7%	45.0%	39.3%	484
Quintile 2	15.4%	47.0%	37.6%	338
Quintile 3	19.6%	50.3%	30.1%	312
Quintile 4	29.3%	40.3%	30.4%	345
Quintile 5	38.9%	38.0%	23.1%	350
Household structure				
Extended family	27.8%	43.4%	28.8%	500
Nuclear family	21.6%	44.3%	34.1%	1329
Does the household participate in business support services?				
Yes	30.3%	46.5%	23.2%	155
No	22.6%	43.8%	33.5%	1674
Does the household participate in social protection programs?				
Yes	18.4%	44.1%	37.6%	463
No	25.0%	44.1%	31.0%	1366
Area of Residence				
Big cities	39.0%	36.9%	24.2%	534
Medium-sized towns	14.2%	48.4%	37.5%	275
Small-sized towns	15.8%	38.2%	46.1%	228
Rural	18.1%	49.1%	32.8%	792
Household income source				
Wage and salaries	28.4%	41.2%	30.4%	517
Income from household enterprise	25.1%	44.1%	30.8%	299
Income from own agriculture	20.2%	50.1%	29.7%	708
Remittance	30.4%	37.5%	32.1%	112
Social security	11.1%	43.2%	45.7%	81
Rent income	27.4%	30.6%	41.9%	62
Other income sources	2.0%	20.0%	78.0%	50
Total	23.3%	44.1%	32.6%	1829
Total	23.3%	44.1%	32.6%	1829

Source: Author's calculation based on the WMS data 2015/16, CSA, Ethiopia

4.3.4 Combined Measure of Food Insecurity

A separate analysis of the two experiential-based measures of food security has been presented in the previous sections. The rCSI is composed mostly of questions that reflect the

"quantity" dimension of food security while FCS is composed mostly of questions that reflect the diversity/quality dimension. Relying on only either of these measures would lead to misclassification of household food security status. Therefore, cross-tabulation is used to provide a new categorization of measurement that yields a more comprehensive indicator, which is more reliable than either of the two measures.

Table 28: Cross-classification of CSI and FCS categories according to household expenditure quintile

	Expenditure Quintile		Coping Strategy Index (rCSI)			
			Low coping (Food secure)	Medium coping (Mildly food insecure)	High/distress coping (Severely food insecure)	Total
Food Consumption Score (FCS)	Quintile 1	High (acceptable)	14.1% (12)	20.0% (17)	9.4% (8)	43.5% (37)
		Borderline	5.9% (5)	10.6% (9)	9.4% (8)	25.9% (22)
		Low (Poor)	1.2% (1)	14.1% (12)	15.3% (13)	30.6% (26)
		Total	**21.2% (18)**	**44.7% (38)**	**34.1% (29)**	**100.0% (85)**
	Quintile 2	High (acceptable)	8.1% (7)	22.1% (19)	11.6% (10)	41.9% (36)
		Borderline	9.3% (8)	16.3% (14)	3.5% (3)	29.1% (25)
		Low (Poor)	4.7% (4)	17.4% (15)	7.0% (6)	29.1% (25)
		Total	**22.1% (19)**	**55.8% (48)**	**22.1% (19)**	**100.0% (86)**
	Quintile 3	High (acceptable)	26.9% (21)	20.5% (16)	6.4% (5)	53.8% (42)
		Borderline	10.3% (8)	12.8% (10)	5.1% (4)	28.2% (22)
		Low (Poor)	6.4% (5)	10.3% (8)	1.3% (1)	17.9% (14)
		Total	**43.6% (34)**	**43.6% (34)**	**12.8% (10)**	**100.0% (78)**
	Quintile 4	High (acceptable)	40.0% (52)	20.8% (27)	3.1% (4)	63.8% (83)
		Borderline	11.5% (15)	10.8% (14)	2.3% (3)	24.6% (32)
		Low (Poor)	3.1% (4)	5.4% (7)	3.1% (4)	11.5% (15)
		Total	**54.6% (71)**	**36.9% (48)**	**8.5% (11)**	**100.0% (130)**
	Quintile 5	High (acceptable)	53.0% (87)	14.0% (23)	4.9% (8)	72.0% (118)
		Borderline	12.8% (21)	4.3% (7)	4.3% (7)	21.3% (35)
		Low (Poor)	1.8% (3)	3.0% (5)	1.8% (3)	6.7% (11)
		Total	**67.7% (111)**	**21.3% (35)**	**11.0% (18)**	**100.0% (164)**
	Total	High (acceptable)	33.0% (179)	18.8% (102)	6.4% (35)	58.2% (316)
		Borderline	10.5% (57)	9.9% (54)	4.6% (25)	25.0% (136)
		Low (Poor)	3.1% (17)	8.7% (47)	5.0% (27)	16.8% (91)
		Total	**46.6% (253)**	**37.4% (203)**	**16.0% (87)**	**100.0% (543)**

The two measures, rCSI and FCS, are combined based on the following criteria to generate a Combined Experiential Measure of Food Security (CEMFS).

Food secure	– Low rCSI and High FCS – Low rCSI and medium FCS – Medium rCSI and high FCS
Intermediate	– Low rCSI and poor FCS – Medium rCSI and medium FCS – High rCSI and high FCS
Food insecure	– High rCSI and medium FCS – High rCSI and low FCS – Medium rCSI and low FCS

The overall result in Table 28 revealed that 62.2% of the households were in low rCSI and within the high FCS range. Households in this group have less stress to cope with the food insecurity situation and obtain more varieties of nutrition. They are categorized as a food-secure group. Households in this group are likely to be doing satisfactorily in terms of both quality and quantity of food. On the other end, 18.2% of the households are in high rCSI and low FCS. These are households under distress to cope with the food insecurity and obtain poor nutrition, which is classified in the food-insecure group. This group might require intervention to enable them to cope with the food insecurity situation. The remaining 19.5% of households are in the medium group that is, either with low rCSI and low FCS, or with high rCSI but within the high range of FCS, or the medium level on both measures. This group of household requires special considerations, as they are equally likely to develop into either of the food-secure or food-insecure group.

Tables 29 and Table 30 present the CEMFS across household expenditure quintile, place of residence, household income source, and other household characteristics (such as household structure, gender of the head of the household, participation of the household in social protection programs, participation of the household in business development services, and household income source) that revealed some noticeable relationships.

As depicted in Table 29, the level of household food insecurity is related to household expenditure quintile, as 38.8% of them in the lowest quintile were food insecure. The percentage of food-insecure households in the subsequent quintile decreases steadily, and

only 9.1% of the households in the highest quintile were food insecure. A similar pattern of insecurity level was reported in the earlier analysis of rCSI and FCS. Likewise, the percentage of food secure households increases along with the ranks of expenditure quintile, in which case, 40% of households in the lowest quintile were food secure as compared with 80% of those in the highest quintile. The difference in the level of food security/insecurity between the lower quintiles (quintile 1/quintile 2) and the upper quintile (quintile 4/quintile 5) is statistically significant at the 95% confidence level.

Table 29: Food security status of households by expenditure quintile

Food security status CEMFS	Expenditure Quintile				
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Food secure	40.0%$_{a}$	39.5%$_{a}$	57.7%$_{a,b}$	72.3%$_{b,c}$	79.9%$_{c}$
Borderline	21.2%$_{a,b}$	32.6%$_{a}$	25.6%$_{a}$	16.9%$_{a,b}$	11.0%$_{b}$
Food insecure	38.8%$_{a}$	27.9%$_{a,b}$	16.7%$_{b,c}$	10.8%$_{c}$	9.1%$_{c,d}$
Total	100.0%	100.0%	100.0%	100.0%	100.0%
N	85	86	78	130	164

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportion.
Source: Author's calculation based on the WMS data 2015/16, CSA, Ethiopia

As shown in Table 30, female-headed households and households participating in social protection programs are more food insecure, and the difference is statistically significant. Consistent with the separate analysis for rCSI and FCS scores, the combined indicator of household food insecurity (CEMFS) also revealed similar results.

Table 30: Food security status of households by household structure, the gender of the head, and participation of households in social protection programs and business development services

Food security status CEMFS	Household structure		Gender of the head of the household		Participation of households in social protection programs		Participate in business development services	
	Extended	Nuclear	Male	Female	Yes	No	Yes	No
Food secure	67.3%$_{a}$	60.0%$_{a}$	66.9%$_{a}$	55.6%$_{b}$	44.4%$_{a}$	64.6%$_{b}$	73.9%$_{a}$	61.7%$_{a}$
Borderline	19.0%$_{a}$	19.7%$_{a}$	18.8%$_{a}$	20.6%$_{a}$	25.4%$_{a}$	18.8%$_{a}$	8.7%$_{a}$	20.0%$_{a}$
Insecure	13.7%$_{a}$	20.3%$_{a}$	14.4%$_{a}$	23.8%$_{b}$	30.2%$_{a}$	16.7%$_{b}$	17.4%$_{a}$	18.3%$_{a}$
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
n	168	375	320	223	63	480	23	520

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportion.
Source: Author's calculation based on the WMS data 2015/16, CSA, Ethiopia

Although the difference is not statistically significant, households with the nuclear family structure are more food insecure compared to households with extended family structure. The

combined measure of food insecurity does not show a significant difference between households involved in business activities or not.

4.3.5 Correlation between different Food Security Measures

The use of the correlation coefficient is essential for establishing bivariate relationships used by food security researchers. A study conducted in the Northern region of Ethiopia (Maxwell et al. 2013) has tested the outcome indicators FCS and rCSI with Spearman's correlation and revealed a strong negative correlation between FCS and rCSI. The strength of the correlation among indicators in this study (Calorie intake, FCS, and rCSI) was similarly tested using Spearman's correlation. Spearman's correlation is used, as it is a statistical measure mostly used to examine non-parametric relationships (Pallant 2011). As shown in Table 31, the correlation among the three household food security measures is generally significant; the measures are associated in the expected direction and are significant.

As depicted in the result, the correlation between daily caloric consumption and the two experiential-based measures (FCS and rCSI) shows that there is a relatively weak, but statistically significant correlation. The correlation between the FCS and rCSI is, however, much more robust ($r = -.291$) and is significant at the $p<0.01$ level.

Table 31: Correlation matrix of household food insecurity measures

Indicator	FCS	rCSI	Gross calorie intake per person per day
Food Consumption Score (FCS)	1.000	-.291**	.045**
Coping Strategy Index (rCSI)	-.291**	1.000	-.063**
Gross calorie intake per person per day	.045**	-.063**	1.000

**. Significant at p< 0.01

Source: Author's calculation based on the WMS data 2015/16, CSA, Ethiopia

Higher FCS scores indicate greater dietary diversity and food frequency; thus, less food insecurity while higher rCSI implies households under higher stress to cope with food insecurity. Thus, an inverse correlation between FCS and rCSI is expected.

Besides portraying the overall picture of the food security situation of households across time and urban hierarchies, descriptive analysis of the secondary data in this chapter also provides a set of variables to explain the apparent food security situation in the country.

In this regard, Table 32 presents Chi-Square tests of the association between measures of food insecurity (calorie intake, FCS, rCSI, and CEMFS) and demographic and socio-economic characteristics of households, which revealed a significant association between most of the food insecurity measures and the listed demographic and socio-economic characteristics explanatory variables.

Table 32: Pearson Chi-Square tests of association between food insecurity measures and demographic and socio-economic characteristics

Background characteristics of households		Calorie intake	FCS	rCSI	CEMFS
Gender of the head of the household *(Male-headed versus female-headed)*	Chi-square	95.134	41.849	20.408	9.277
	df	2	2	2	2
	Sig.	.000*	.000*	.000*	.010*
Household size *(1-2, 3-4, 5+)*	Chi-square	4994.438	47.907	13.932	8.758
	df	4	4	4	4
	Sig.	.000*	.000*	.008*	.067
Household structure *(Nuclear versus extended)*	Chi-square	531.403	54.457	9.185	3.763
	df	2	2	2	2
	Sig.	.000*	.000*	.010*	.152
Place of residence *(Big cities, medium-sized towns, small-sized towns, and rural areas)*	Chi-square	685.137	687.358	120.933	103.150
	df	6	6	6	6
	Sig.	.000*	.000*	.000*	.000*
Source of household income *(Wage and salaries, household business, agriculture, remittance, social security, rental income, and other miscellaneous income)*	Chi-square	312.441	368.129	84.495	41.026
	df	12	12	12	12
	Sig.	.000*	.000*	.000*	.000*,b
Expenditure quintile *(quintile 1, quintile 2, … quintile 5)*	Chi-square	8392.121	1065.550	92.019	75.822
	df	8	8	8	8
	Sig.	.000*	.000*	.000*	.000*
Participation of households in social protection programs	Chi-square	1.389	25.558	8.412	1.976
	df	2	2	2	2
	Sig.	.499	.000*	.015*	.372b
Participation of households in business development services	Chi-square	165.574	68.408	11.112	10.449
	df	2	2	2	2
	Sig.	.000*	.000*	.004*	.005*

*. The Chi-square statistic is significant at the .05 level.

4.4 Conclusion

This chapter aimed to provide an in-depth empirical ground for the literature on the food security situation in Ethiopia with a comprehensive analysis of food security situation across time and urban hierarchies (objective 1 of the thesis). The data from HCES and WMS national surveys conducted by the Central Statistical Agency (CSA) in 2004/5, 2010/11, and 2015/6 was subjected to an in-depth descriptive analysis. Descriptive analysis of the secondary data concerning demographic characteristics of households such as household size, household headship, household structure, and socio-economic characteristics such as household expenditure, sources of income, and participation in social protection programs and micro and small business activities was presented to show variation in the prevalence of food insecurity across these factors.

According to the result, the average household size in urban areas of Ethiopia has steadily declined while it was unchanged almost throughout the analysis period in rural areas. Concerning sex ratio, there was an almost similar size of the male and female population in rural areas across all the surveys while the size of the female population dominates the male population in urban areas. Concerning the family structure, the percentage of households with extended family members was significantly higher in urban areas throughout the analysis period. Headship wise, the proportion of female-headed households consistently increases with an increase in the level of urbanisation.

With income sources, wage and salary remained to be the leading source of income for urban households while agriculture remains to be the primary source of household income in rural areas. The contribution of non-farming economic activities in rural areas has continued to increase over time, indicating a slow increase in non-farm activities. The contribution of remittance as a source of household income has continued to increase over time. The analysis

also showed an increase in household food expenditure in urban areas over time.

Concerning access to social protection programs, the percentage of households who received support from social protection programs/projects (such as safety net, asset building, and food aid) were higher in rural areas as compared to urban areas. The 2010/11 and 2015/16 national survey result showed that social protection services were almost non-existent to urban households in big cities. Irrespective of the place of residence and across time, the result of the national surveys revealed that social protection services were provided dominantly to female-headed households as compared with households headed by males. The percentage of households benefiting livelihood improvements such as starting own business and accessing micro and small business support (and credit from microfinance institutions) has declined between 2010/11 and 2015/16.

The analysis of the food security measures was made using measures such as consumption of kilocalories per adult equivalent per day, FCS, and rCSI were used. Concerning the food security situation of households in Ethiopia during the analysis period, calorie intake per person per day has increased over time. Calorie intake is the highest in rural areas, and it decreases with the level of urbanisation. Calorie intake per person per day, among households in big cities, was the lowest when compared to the calorie intake among households in small and medium-sized towns and rural areas. The calorie intake per person per day among households in the lowest quintile (quintile 1) has a decreasing trend through the period below the recommended minimum standard while it continued to improve for the households in the upper quintile (quintile 5). The result of the FCS, the primary indicator used by WFP as a proxy indicator for the quantity and quality of food, was significantly lower among female-headed households across all the background characteristics of the households. Households in big cities adopt strategies such as relying on less preferred and less expensive food, limiting

portion size of meals, and reducing the number of meals eaten in a day as compared with households in medium and small-sized towns and rural areas. The rCSI was used to measure the level of household stress to cope with food access insecurity and that higher rCSI (higher stress to cope) was revealed among female-headed households compared with their male counterparts. Less stress in coping with food insecurity is revealed among households with regular employment, business owners, those engaged in agricultural activities, and access to remittances. Households participating in social protection programs were generally food insecure and had a higher level of stress in coping with food insecurity.

The following chapter deals with the analysis of the household survey data collected from food-insecure urban households from three sites (Addis Ababa, Hawassa, and Sheki) along the continuum of urban hierarchies representing small, medium and big city respectively.

CHAPTER FIVE

FIELDWORK AND ANALYSIS

5.0 Introduction

A comprehensive analysis of the food security situation in Ethiopia across time and selected background characteristics of households have been covered in the previous chapter. The analysis was based on the data from the three rounds of the national surveys in 2004/5, 2010/11, and 2015/16 with representative samples of households from rural and urban areas of 9 regions and 2 city administrations.

The analysis in the previous chapter has covered a broader assessment of the food security situation in Ethiopia that calorie intake per person per day has steadily improved in the period between 2004/5 and 2015/16. The calorie intake per person per day had a decreasing trend at both urban and rural areas through these periods. The study found that there is a significant association between household food insecurity and place of residence (big cities, medium-sized towns, small-sized towns, and rural areas). Low access to balanced nutrition (low FCS) and high stress in coping with food access insecurity is revealed in rural areas and small- and medium-sized towns compared to households in big cities. Households in the lowest expenditure quintile in big cities were found to be food insecure compared to their counterparts in small- and medium-sized towns and rural areas. According to the study result, the gender of the head of the household and family structure has a profound relationship with food insecurity. The variation in calorie intake across the continuum of urban hierarchy revealed that calorie intake was the highest in rural areas, and it decreases with an increase in the size of an urban area. Concerning coping with food insecurity, less stress in coping with food access insecurity was revealed among households with regular employment, business

owners, engaged in agricultural activities, and access to remittances. Households participating in social protection programs were generally food insecure.

This chapter deals with the analysis of the household survey data collected from households in slum communities, at three urban sites, along the continuum of urban hierarchies. Section 5.1 describes the demographic and socio-economic characteristics of these food-insecure households. The results presented include age and sex composition of the household population, background characteristics of heads of households, sources of household income, housing conditions, household's possession of durable assets, household's participation in urban productive safety net programs, access to micro and small enterprises development services, and household's link with their rural kin structure. Section 5.2 presents some measures of food insecurity among the study households such as food shortage, FCS, HFIAS, and rCSI. Section 5.3 presents a bivariate analysis of the association between coping with food access insecurity and the explanatory variables such as household structure and composition, household economic resources, productive safety net programs, and urban-rural social linkage. Finally, section 5.4 dealt with a model specification of the multivariate regression analysis of coping with food access insecurity and evaluation of the assumptions, construction of the model, and interpretation of the results of the regression model.

5.1 Demographic and Socioeconomic Characteristics of the Study Households

This section presents the results of the demographic and socio-economic characteristics of the study households following the study objectives and the conceptual framework of the study. The household characteristics discussed were the age-sex structure, characteristics of the heads of the studied households (such as age, gender, education, marital status, and migration status), household structure (extended versus nuclear), household size, sources of household income, housing conditions, and household assets. The analysis was also made on the

household's participation in urban productive safety net programs, access to micro and small enterprises development services, and household's linkage with rural kin structure.

5.1.1 Age and Sex Composition of Household Population

The most basic demographic characteristic of a household is the number of members it contains (Bongaarts 2001). Age and sex structure of a given population is of particular interest for the analysis of social relationships within a community as they are considerably affected by the relative composition of gender and age. Accordingly, Table 33 of the study presents the age-sex structure of the study population along the continuum of urban hierarchies. The age-sex data is indicative of the dynamics of the demographic structure in the study population.

The proportion of young children in each household is used as one of the variables in this research to determine food insecurity and coping mechanisms of the poor households. Overall, the survey collected household data on 2249 members of households (682 in Sheki, 822 in Hawassa, and 745 in Addis Ababa). The percentage of young children under the age of 14 years was 27 per cent, the highest proportion of young children being in the small-sized town of Sheki (30%) compared with Addis Ababa (27%) and Hawassa (26%).

Table 33: Percentage distribution of the household population by age and according to sex and study site

Age	Addis Ababa			Hawassa			Sheki			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	17%	14%	15%	9%	7%	8%	12%	9%	11%	13%	10%	11%
5-13	12%	11%	11%	17%	19%	18%	21%	19%	20%	17%	16%	16%
14-17	11%	12%	12%	17%	20%	18%	9%	11%	10%	12%	15%	14%
18-29	30%	23%	26%	24%	22%	23%	20%	22%	21%	25%	23%	23%
30-60	23%	32%	28%	29%	28%	28%	31%	29%	30%	28%	30%	29%
60+	8%	8%	8%	4%	4%	4%	7%	10%	8%	6%	7%	7%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Number	318	427	745	380	442	822	334	348	682	1032	1217	2249
Sex ratio			0.74			0.86			0.96			0.85

The percentage of the child population (below 18 years of age) accounted for 41% (38% in Addis Ababa, 44% in Hawassa, and 40% in Sheki). More than one-third of the surveyed population (37%) was within the youth age group (14-29 years). The proportion of the youth group was slightly higher in medium (42%) and big towns (37%) as compared with the Sheki (31%). The proportion of elderly (aged above 60 years) accounted for only 7% with only slight variation across the urban hierarchy.

The sex ratio is calculated by dividing the number of the male by the respective number of females in each geographic location or group of population. Sex ratio is the number of males to 100 females, which is a widely used measure of sex composition (Siegel and Swanson 2004). An account of the survey result shows the differences in the sex ratio across the urban hierarchies. The overall result revealed that the number of females outweighs the number of males in urban areas (85 males per 100 females). However, this figure varied across urban hierarchies. In Addis Ababa, the sex ratio is the lowest that for every 100 female there were 72 males; the sex ratio increases to 86 males per 100 females in Hawassa; nearly equal male and female were reported at the Sheki (96 males per 100 female).

5.1.2 Household Structure and Composition

Data on the household structure and composition such as age, gender, education, marital status, migration status, household structure, and household size are presented in Table 34. The data on the gender of the household head in this study is used as a critical variable concerning the level of household vulnerability to food insecurity. Overall, half of the surveyed households were female-headed (71% in Addis Ababa, 41% in Hawassa, and 39% in the small-sized town of Sheki). The heads of the households in Addis Ababa were mostly female with an average age of 53 years; they were older than heads of households at Hawassa and Sheki whose average age was 42 and 49 years respectively.

Table 34: Household composition and structure according to the study sites

Characteristics		Addis Ababa	Hawassa	Sheki	Total
Age of the head	Below 30	3.0%	8.9%	5.4%	5.8%
	30-45	35.5%	61.9%	42.2%	46.6%
	46-60	31.9%	20.8%	36.1%	29.6%
	Above 60	29.5%	8.3%	16.3%	18.0%
	Total	100.0%	100.0%	100.0%	100.0%
	Mean age	53.1	41.5	48.6	47.7
Gender of the head	Female	71.1%$_a$	40.5%$_b$	38.6%$_b$	50.0%
	Male	28.9%$_a$	59.5%$_b$	61.4%$_b$	50.0%
	Total	100.0%	100.0%	100.0%	100.0%
Education of the head	Illiterate	42.8%$_a$	21.4%$_b$	42.2%$_a$	35.4%
	Primary education	33.7%$_a$	57.1%$_b$	44.6%$_{a,b}$	45.2%
	Secondary and above	23.5%$_a$	21.4%$_{a,b}$	13.3%$_b$	19.4%
	Total	100.0%	100.0%	100.0%	100.0%
Marital status of the head	Married	44.0%$_a$	78.6%$_b$	61.4%$_c$	61.4%
	Never married	4.2%$_a$	1.2%$_a$	1.2%$_a$	2.2%
	Divorced	13.9%$_a$	4.8%$_b$	13.3%$_a$	10.6%
	Widowed	38.0%$_a$	15.5%$_b$	24.1%$_b$	25.8%
	Total	100.0%	100.0%	100.0%	100.0%
Migration status of the head	Non-migrant	37.3%$_a$	11.3%$_b$	45.8%$_a$	31.4%
	Migrant	62.7%$_a$	88.7%$_b$	54.2%$_a$	68.6%
	Total	100.0%	100.0%	100.0%	100.0%
Household structure	Nuclear	63.3%$_a$	61.9%$_a$	85.5%$_b$	70.2%
	Extended	36.7%$_a$	38.1%$_a$	14.5%$_b$	29.8%
	Total	100.0%	100.0%	100.0%	100.0%
Household size	1-2	12.7%$_a$	10.1%$_a$	24.1%$_b$	15.6%
	3-4	44.0%$_a$	36.3%$_a$	39.8%$_a$	40.0%
	5-6	31.3%$_{a,b}$	36.3%$_a$	22.3%$_b$	30.0%
	7+	12.0%$_a$	17.3%$_a$	13.9%$_a$	14.4%
	Total	100.0%	100.0%	100.0%	100.0%
	Average household size	4.5	4.9	4.1	4.5
Number		166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions.

Education, in general, opens employment opportunity and determines the income level. According to the household data, a little more than one-third of the heads of the households (35%) were illiterate while those with secondary school and a higher level of formal education account for 19% of the household heads. Illiterate heads of the households were

mostly female (75%) while male heads in this category accounted for only 25%. On the contrary, of the male heads of households with secondary and above education accounted for 75% while the percentage of female heads in this level of education accounted only for 25% (data not shown in the table).

Among households interviewed in this research, 44% in Addis Ababa, 78.9% in Hawassa, and 61% of them in Sheki were married. Of the heads of households in Addis Ababa, more than half (52%) of them were either widowed or divorced. A very few of the heads were never married (4% in Addis Ababa, 2% at Hawassa and Sheki each). Figure 12 shows gender-disaggregated data on the marital status of heads of households.

Nearly all (92%) male heads of the households were married while the percentage of married female heads of household accounts for only 30%. Two-thirds of the female heads of the households (66%) were either widowed (46.4%) or were divorced (19.6%). The result here indicates that unlike men, widowed/divorced women are less likely to remarry.

More than two-thirds (69%) of the heads of the households were migrants within Ethiopia (63% in Addis Ababa, 89% at Hawassa, and 54% at Sheki). The percentage of non-migrant heads of households was higher in a small-sized town as compared with the situation in the big city (Addis Ababa) or the regional town (Hawassa).

The household structure (nuclear and extended) along the continuum of urban hierarchies is the other factor of a concern for the analysis of food security. The conventional definition of nuclear and extended household structure used in is this research is per the Penguin dictionary of sociology. Abercrombie, Hill and Turner (1994) defined nuclear family as a social unit comprising parents and their children and no other relatives of the head or nonrelatives; and extended family as a social unit comprising a nuclear family and other more distant relatives, grandparents, uncles and aunts, living under one roof. Overall, nearly one-

third (30%) of the households had an extended structure. The percentage of households with extended structure was significantly higher in the big city Addis Ababa (37%) and the medium-sized town Hawassa (38%) as compared with the small-sized town Sheki (14%).

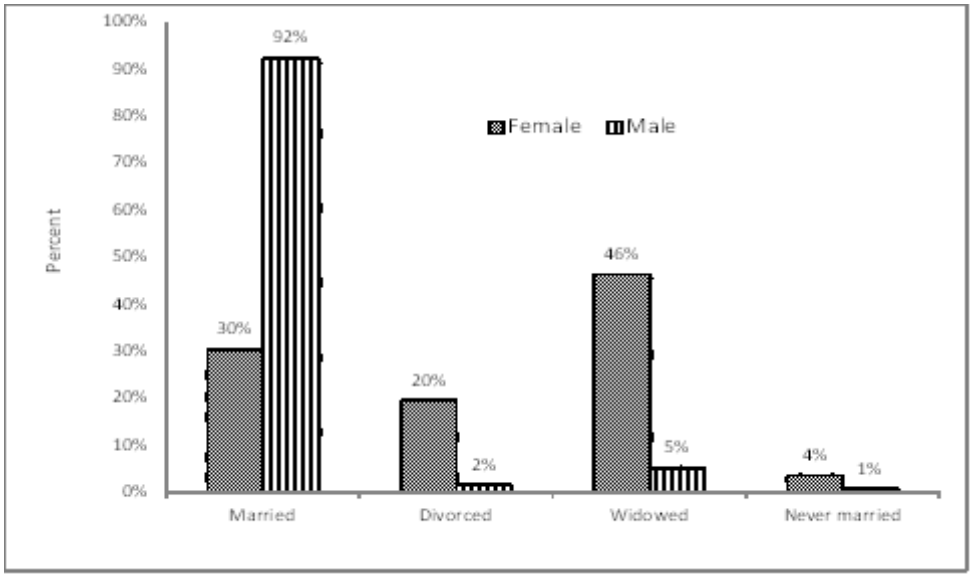


Figure 12: Marital status of heads of households according to gender

Average household size varied among the urban hierarchies, ranging from 4.9 in Hawassa to 4.5 in the Addis Ababa, and 4.1 in the small-sized town Sheki. As shown in Table 36, the average household size of male-headed households substantially exceeded the average household size of female-headed households. The difference in average household size between male and female-headed households was the largest at the small-sized town Sheki (4.8 versus 3.1) and the medium-sized town Hawassa (5.3 versus 4.3). The difference in household size was the result of a smaller number of both adults and children in female-headed households. Average household size showed no difference between male-headed and female-headed households in Addis Ababa.

The finding in this research also revealed a relationship between household structure and household size. The average household size of households with a nuclear structure was around four members, which does not show significant variation across the urban hierarchies (except a slightly higher value of 4.4 in Hawassa). However, the average household size of

households with extended structure was 5.4, which is higher than the case for nuclear households by more than one member. There was a significant difference in household size between nuclear and extended households across all the urban hierarchies (4.0 versus 5.4 in the big city; 4.4 versus 5.6 in medium-sized town; and 4.0 versus 5.0 in small-sized town). The result revealed that households with an extended structure have 1.4, 1.2, and 1.0 additional member in the big city, medium-sized town, and small-sized town respectively in average household size between and nuclear structure.

Table 35: Mean household size by gender of the head of the household and family structure according to the study sites

	Addis Ababa	Hawassa	Sheki	Total
Household headship				
Female-headed	4.5	4.3	3.1	4.1
Male-headed	4.5	5.3	4.8	4.9
Household structure				
Nuclear	4.0	4.4	4.0	4.1
Extended	5.4	5.6	5.0	5.4
Total	4.5	4.9	4.1	4.5

Average household size also varied across the marital status of the heads of the household. As shown in Table 36, married male heads of households had a larger average household size compared to households headed by a married female.

Table 36: Average household size by marital status and according to the gender of the heads of the households

Marital status	Female-headed	Male-headed	Total
Married	4.7	5.1	5.0
Divorced	3.4	2.0	3.3
Widowed	4.0	2.6	3.9
Never married	2.9	1.0	2.5
Total	4.1	4.9	4.5

Unmarried female-headed households had a higher number of average household size as compared with the unmarried male-headed households. For instance, widowed female-headed households had an average size of 4.0, while households headed by a widowed male

had an average size of 2.6. Similarly, divorced and never married female heads of households had a larger average household size as compared with their male counterparts.

5.1.3 Sources of Household Income

Income sources of the study households are shown in Table 37. Daily labour, small business, regular salary, and pensions and other social protection programs are four of the primary income sources of the study households. Overall, the livelihoods of 43% of the study households (29% in Addis Ababa, 55%in Hawassa, and 46% in Sheki) depend upon daily labour. Small business accounts for 17 per cent of the income source of the households (10% in Addis Ababa, 21%in Hawassa, and 21% in Sheki). Overall, 17 per cent of the households (24.1% in Addis Ababa, 13%in Hawassa, and 12.0% in Sheki) were earning a regular salary from formal employment. Income from pensions and other social protection programs accounts for 11 per cent of the households (24% in Addis Ababa, 8% in Hawassa and 1% in sheki). Remittance accounts for about 6 per cent of the household income.

Table 37: Sources of household income according to the study sites

	Addis Ababa	Hawassa	Sheki	Total
Regular salary	24.1%$_a$	13.3%$_b$	12.0%$_b$	16.5%
Casual labour	28.9%$_a$	54.5%$_b$	45.8%$_b$	43.1%
Agricultural activities	0.0%[1]	0.6%$_a$	3.0%$_a$	1.2%
Small businesses	9.6%$_a$	21.2%$_b$	21.1%$_b$	17.3%
Social protection (including pension)	24.1%$_a$	7.9%$_b$	1.2%$_c$	11.1%
Remittance	7.2%$_a$	1.2%$_b$	9.0%$_a$	5.8%
Other income sources (begging, prostitution and the like)	6.0%$_{a,b}$	1.2%$_a$	7.8%$_b$	5.0%
Total	100.0%	100.0%	100.0%	100.0%
Number	166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions.

The income sources, however, varied along the continuum of urban hierarchies. For instance, daily labour accounted as a major source of income for food-insecure urban households in the medium and small-sized town (55% in Hawassa and 46% in Sheki). Salary from permanent

employment was higher in Addis Ababa (24%) and is less by half in the medium and small-sized town (13% in Hawassa and 12% in Sheki). Households whose livelihood was based on small business were higher in small- and medium-sized towns (21%) as compared with those in Addis Ababa (9%). Income source from pensions and other social protection programs is the highest in Addis Ababa (24%) as compared with households in medium- and small-sized towns.

As shown in Table 37, pensions and other social protection programs are the primary income sources in the big city while daily labour was the principal source of the household livelihood in the small- and medium-sized towns. There was a significant difference in the percentage distribution of income from different sources between Addis Ababa and the small- and medium-sized towns (Sheki and Hawassa).

5.1.4 Housing Conditions

House rent is a considerable livelihood expense in urban areas. According to the survey data (Table 38), most of the households in Addis Ababa and the medium-sized town (Hawasa) live in a rented house (87.4% and 96.4% respectively) while in the small-sized town (Sheki) more than half of the households (55%) were living in their own house. Most of the households in Addis Ababa (75%) rented a government social houses (that are mostly cheaper rental rate) while in Hawassa more than half of them (59%) rented houses from private households.

The data on housing characteristics of the study households also revealed that some peculiar characteristics at each site. For instance, two-thirds (66%) of the housing units at Hawassa, most of which were rented from private households, consisted of one room. The reason is evident that rent from private households is expensive that the poor households cannot afford to rent houses with more number of rooms.

Table 38: Housing conditions of the study households

	Addis Ababa	Hawassa	Sheki	Total
Dwelling type				
Own house	6.6%	3.0%	54.5%	21.3%
Rented from government	74.7%	37.7%	25.5%	46.0%
Rented from private household	12.7%	58.7%	15.2%	28.9%
Rent-free	6.0%	0.6%	4.8%	3.8%
Total	100.0%	100.0%	100.0%	100.0%
Number of rooms				
1 room	38.0%	65.5%	22.3%	42.0%
2 rooms	48.8%	33.9%	56.0%	46.2%
3+ rooms	13.3%	0.6%	21.7%	11.8%
Total	100.0%	100.0%	100.0%	100.0%
The average number of rooms	1.8	1.3	2.1	1.7
Persons per room	2.5	3.8	2.0	2.6
Type of kitchen				
No kitchen	21.1%	34.5%	28.9%	28.2%
Private kitchen	21.7%	19.0%	66.3%	35.6%
Shared kitchen	57.2%	46.4%	4.8%	36.2%
Total	100.0%	100.0%	100.0%	100.0%
Number	166	168	166	500

Accordingly, "overcrowding" measured in terms of the average number of persons per room, is the highest in Hawassa at 3.8 persons per room followed by 2.5 persons per room in Addis Ababa. As most households live in their own house, overcrowding is low at the small-sized town of Sheki (2 persons per room). More than a quarter of the households (28%) do not have a kitchen. More than half of the households (57%) in Addis Ababa and nearly half of the households in Hawassa (46%) use shared kitchen. Two-thirds of the households in the small-sized town have a private kitchen.

5.1.5 Household Assets

The asset information was collected in the household survey and covers information on household ownership of a range of consumer durables, production equipment, valuables, livestock, and plantations. The five most commonly owned material assets (As shown in Table 39) were: bed, mobile phone, chair and table, TV set, and sofa set as reported by 83%,

70%, 67%, 60%, and 32% of the households respectively. However, asset ownership varies across urban hierarchies. The top five assets owned by the study households in Addis Ababa were: bed (96%), TV set (86%), mobile phone (85%), sofa set (66%), and chair and table (44%). Similarly, households in Hawassa reported the same items ranked as the top five with a slight variation in the percentages bed (89%), mobile phone (86%), chair and table (80%), TV set (73%), and sofa set (29%). The list of the top five assets in Sheki, however, varies chair and table (78%), bed (65%), wood cutting equipment (46%), mobile phone (39%), and permanent crops such as *khat*, coffee, and the likes (22%). Ownership of livestock (such as cattle, chicken, sheep and goats), permanent crops and forestry, and construction equipment are items owned by households in the small-sized town (Sheki).

Table 39: Physical assets households possess by urban hierarchy

Item	Addis Ababa	Hawassa	Sheki	Total
Bed	96.4%	89.3%	64.5%	83.4%
Mobile phone	84.9%	86.3%	38.6%	70.0%
Chair and table	44.0%	79.8%	77.7%	67.2%
TV set	85.5%	72.6%	20.5%	59.6%
Sofa set	66.3%	28.6%	0.6%	31.8%
Woodcutting equipment	0.0%	3.6%	46.4%	16.6%
Refrigerator	35.5%	10.1%	1.8%	15.8%
Gas cooking stove	34.3%	0.6%	1.2%	12.0%
Permanent crops (*khat*, coffee, and the likes)	0.0%	0.0%	22.3%	7.4%
Valuables (Gold and silver)	0.0%	8.3%	7.8%	5.4%
Chicken	0.0%	4.8%	9.6%	4.8%
Video recorder	1.8%	1.2%	9.0%	4.0%
Forestry (Eucalyptus tree, tid, and the likes)	0.0%	0.0%	11.4%	3.8%
Sheep and goat	0.0%	4.8%	6.0%	3.6%
Cattle	0.0%	3.0%	6.6%	3.2%
Builder's equipment	0.0%	0.0%	9.0%	3.0%

Whereas, items such as sofa set, refrigerator, and cooking stove were commonly available in more urbanized sites than in the small-sized town. Valuables such as gold and silver are items not commonly owned by the study households as they were selected from among the most

destitute in the study areas. About one in every ten of the households (8%) in Hawassa and Sheki reported having valuables while none in Addis Ababa had valuables.

Other items owned by less than 3% of the households were (not included in this table) were transport animals, cart, sewing machine, carpenter's equipment, farm equipment, weaving equipment, welding equipment, block production equipment, bicycle, motorcycle, and car. Because the list of the household durables is extensive, an index was generated by the principal component analysis (PCA). The PCA score is used to classify households into five levels, as shown in Table 40, where 1 represents the lowest and 5 represent the highest levels of asset ownership. Asset ownership increases with an increase in urban size.

Table 40: Bivariate table of asset index by study sites

Asset index	Addis Ababa	Hawassa	Sheki	Total
1-Low	7.2%$_{a}$	10.1%$_{a}$	44.0%$_{b}$	20.4%
2	21.7%$_{a}$	14.3%$_{a}$	22.9%$_{a}$	19.6%
3	24.7%$_{a}$	19.0%$_{a,b}$	13.9%$_{b}$	19.2%
4	22.3%$_{a}$	38.7%$_{b}$	7.2%$_{c}$	22.8%
5-High	24.1%$_{a}$	17.9%$_{a,b}$	12.0%$_{b}$	18.0%
Total	100.0%	100.0%	100.0%	100.0%

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions.

5.1.6 Household's Participation in Urban Productive Safety Net Programs

The components of the Ethiopian social protection landscape, relevant to the study of food security include the Productive Safety Net Programme (PSNP), Household Asset Building Programme (HABP) and National Nutrition Programme (NNP) (Ministry of Labour and Social Affairs 2012). The poverty reduction strategy (National Planning Commission 2016) also provided a framework to improve the creation of job opportunities as a mechanism to address household vulnerabilities to food insecurity. Accordingly, this research gathered data from study households regarding the participation of households in any of the following

programs: productive safety net, supplementary food for children, food emergency resources, employment promotion, and household asset building.

The surveyed households, across all the sites, were the ones identified by the Urban Food Security and Employment Creation Office of the respective local government as the poorest of the poor. About 54% of the study households were involved in safety net programme (54% in Addis Ababa, 99% in Hawassa, and 8% in Sheki).

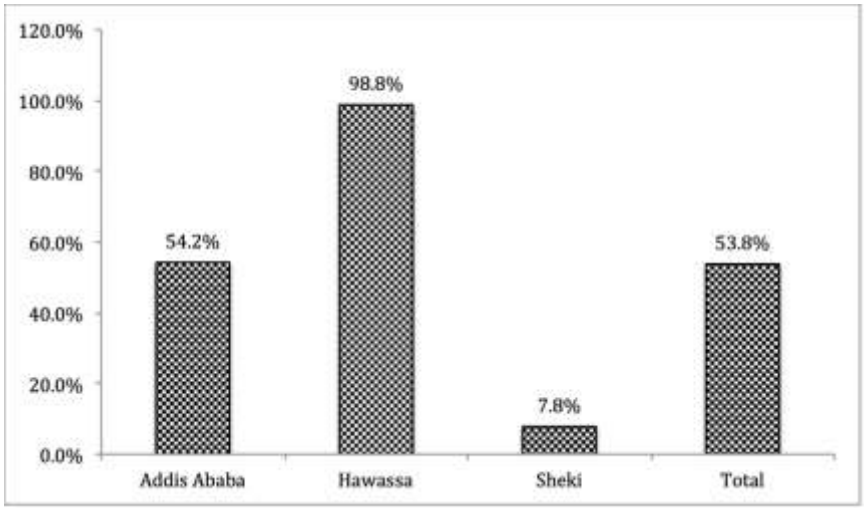


Figure 13: Percentage of households with access to UPSNP by study site

5.1.7 Access to Micro and Small Enterprises Development (MSE) Services

Overall, 4% of households (11% in Addis Ababa, 7% in Hawassa, and 0.6% in Sheki) received technical support from the micro and small business development support unit during the past one-year period (Table 41). The supports include access to information, working space, training, and access to credit facilities. As part of the government support through micro and small business development initiatives, microfinance institutions are set to provide access to households in distress and their members. In this study, however, the level of utilisation of such formal services was not as such noticeable. According to the result, 12% of the households in Addis Ababa, 31% in Hawassa and 3% in Sheki had access to loans/savings.

A relatively higher proportion of households (20%) had saved in "*Equib*" over the past year. Rate of participation in *Equib* was higher among households in the regional capital of Hawassa (29%). Participation in *Equib* among the study households in the capital city (Addis Ababa) and the mall-sized town (Sheki) was 16% and 13%, respectively. A higher percentage of households in *Equib* at Hawassa could be due to a relatively higher income they earn from daily labour and small business as compared to households in small-sized town.

Table 41: Households utilisation of micro and small business development services

		Addis Ababa	Hawassa	Sheki	Total
Households who had savings/loan from a microfinance institution over the past year	No	88.0%$_a$	69.0%$_b$	97.0%$_c$	84.6%
	Yes	12.0%$_a$	31.0%$_b$	3.0%$_c$	15.4%
	Total	100.0%	100.0%	100.0%	100.0%
Households who had benefited from a micro and small-scale business support service over the past year	No	95.8%$_{a,b}$	92.9%$_a$	99.4%$_b$	96.0%
	Yes	4.2%$_{a,b}$	7.1%$_a$	0.6%$_b$	4.0%
	Total	100.0%	100.0%	100.0%	100.0%
Households who had participated in "*Equib.*"	No	83.7%$_a$	70.8%$_b$	86.7%$_a$	80.4%
	Yes	16.3%$_a$	29.2%$_b$	13.3%$_a$	19.6%
	Total	100.0%	100.0%	100.0%	100.0%

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions.

5.1.8 Household's Linkage with Rural Kin Structure

The urban-rural linkages in this research are measured by the following five sets of socio-cultural and economic indicators: participation in social activities (such as weddings, funerals, and holidays); ownership of property and involvement in economic activities; exchange of money goods; exchange of visits; and seeking advice from families and relatives. As the subject of the study refers to urban residents, these questions specifically refer to the rural linkage of urban households. The response to each measure is given as 0 for 'no' and 1 for 'yes'. Summing the response given to five of the questions provide measures of the level of the urban-rural social linkages. The score of the level of urban-rural social linkages, therefore, ranges between 0 (no urban-rural linkage) and 5 (solid urban-rural

linkage). A similar result was generated with the application of Principal Component Analysis (PCA) to reduce the variables measuring the social linkage. The correlation between the urban-rural linkages index generated with PCA and the above method was almost similar with a strong, positive correlation between the two variables, r = –.95, n = 500, p < .001.

According to the results shown in Table 42, the three most common channels of household's urban-rural linkages were participation in social activities, visiting families and relatives, and seeking advice. Exchange of visits with rural relatives and sharing advice with rural relatives was more common in the small-sized town and decreased with an increase in the size of an urban area.

Table 42: Linkage of urban households with rural families/relatives in rural areas

	Addis Ababa	Hawassa	Sheki	Total
Percentage of household who have kin structure (families/relatives) in a rural village	67.5%a	96.4%b	71.1%a	78.4%
Channels of linkage with kin structure (relatives/families) in a rural village				
– Participation in social activities (such as weddings, funerals, and the likes);	41.0%$_a$	89.3%$_b$	65.7%$_c$	65.4%
– Ownership of property and involvement in economic activities;	22.3%$_a$	9.5%$_b$	27.7%$_a$	19.8%
– Exchange of money and goods with families and relatives in rural areas	6.0%$_a$	6.0%$_a$	29.5%$_b$	13.8%
– Seeking advice from families and relatives	26.5%$_a$	41.7%$_b$	47.6%$_b$	38.6%
– Exchange of visits with families living in rural areas	43.4%$_a$	58.3%$_b$	63.9%$_b$	55.2%
Number	166	168	166	500
Level of urban-rural social linkage				
0	27.7%$_a$	8.0%$_b$	5.9%$_b$	13.0%
1	11.6%$_{a,b}$	22.2%$_a$	5.1%$_b$	14.0%
2	17.9%$_a$	34.6%$_b$	17.8%$_a$	24.7%
3	21.4%$_a$	26.5%$_a$	28.8%$_a$	25.8%
4	17.9%$_a$	5.6%$_b$	12.7%$_{a,b}$	11.2%
5	3.6%$_a$	3.1%$_a$	29.7%$_b$	11.2%
Total	100.0%	100.0%	100.0%	100.0%
Number	112	162	118	392

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions.

From among the indicators, exchange of money and goods with the rural families and relatives was more common among households in the small-sized town (Sheki) but rare among households in bigger urban areas (Addis Ababa and Hawassa).

From among study households with kin structure (families/relatives) in a rural village, 13% do not have any form of linkage with their relatives in rural areas. The level of urban-rural social linkage, however, significantly varied along the continuum of urban hierarchy. More than a quarter of the study households in Addis Ababa (28%) do not have any one of the linkages discussed above. The proportion of households in small- and medium-sized towns without any such linkage was significantly smaller (8% in Hawassa and 6% in the small-sized town of Sheki).

5.2 Food Security Status of the Study Households

This section is devoted to portraying the level of food insecurity among poor households in slum areas across the urban hierarchy represented by the small-sized town (Sheki), the medium-sized town (Hawassa), and the big city (Addis Ababa). The household data is used to provide a descriptive analysis of the food security situation is based on three different indicators: the prevalence of shortage of food during the past 12 months, FCS, and HFIAS. It is worthy to note that the aim of this section is not to provide statistically representative estimates of the food insecurity situation in the study areas. The aim is to lay the basis for understanding the level of food insecurity among the slum dwellers to lay the ground for the analysis of how these households cope with food access insecurity in the forthcoming sections of the thesis.

5.2.1 Food Shortage

The study households were randomly selected from a list of food-insecure households from the study sites. As expected, the data showed that three-quarters of the households (75%) had

a food shortage during the past 12 months (Table 43). The shortage of food was sustained for an average of 4.3 months. As is revealed in the result, the percentage of households affected (58% in Addis Ababa, 77% in Hawassa, and 89% in Sheki), as well as the incidence of food shortage (3.6 months in Addis Ababa, four months in Hawassa, and five months in Sheki), increased with an increase in the size of an urban area. A chi-square goodness-of-fit test indicated that there was a significant association in the proportion of households who had food shortage and the urban hierarchies that were included in the sample study, X^2 (2, n = 500) = .43.62, $p < .001$.

Three of the major factors were responsible for 80% of the causes for the shortage of food (72% in Addis Ababa, 85% in Hawassa, and 82% in Sheki). These were a decrease in the income of the household, a high rate of increase in food price and sickness of household members. Increase in food price and sickness of household members had an equal effect on food shortages across all the study sites. However, the impact of a decrease in income of the household on food shortages varies significantly between the study sites. The other two factors have an equal effect on food shortages among the study sites (25.7% in Addis Ababa, 46.1% in Hawassa, and 33.8% in Sheki).

A rise in food price has emerged as a major challenge in Addis Ababa as reported by more than one-third (35%) of the households. In Hawassa, nearly half of the households reported a decrease in income. In the small-sized town (Sheki) both factors, increase in food price, and decrease in income was identified equally each by 35% of the households. Other factors responsible for food shortages such as termination of employment contract, death of the household head, and death of a working member of the household were also mentioned by 15% of the households.

Table 43: Percentage distribution of households who experienced food shortage, number of months the household had a food shortage and causes for the shortage during the past 12 months according to the urban hierarchies

	Addis Ababa	Hawassa	Sheki	Total
Percentage of households who had food shortage during the past 12 months	57.8%$_a$	76.8%$_b$	89.2%$_c$	74.6%
The average number of months the household had food shortage during the past 12 months	3.6$_a$	4.0$_a$	5.0$_b$	4.3
Causes for food shortage				
– A decrease in income of the household	25.7%$_a$	46.1%$_b$	33.8%$_c$	35.2%
– A high rate of increase in food price	35.0%$_a$	28.8%$_a$	34.1%$_a$	32.9%
– Sickness	11.2%$_a$	7.3%$_a$	10.9%$_a$	10.0%
– Termination of employment	5.0%$_a$	7.8%$_{a,b}$	7.6%$_b$	7.1%
– Death of household head	6.9%$_a$	3.7%$_a$	2.4%$_a$	3.8%
– Death of working member of the household	6.2%$_{a,b}$	1.1%$_a$	3.3%$_b$	3.3%
– Death of other household members	3.7%$_a$	0.5%$_a$	1.4%$_a$	1.7%
– Migration/change of residence	3.1%$_a$	1.1%$_a$	1.4%$_a$	1.7%
– Bad harvest	0.6%$_a$	0.0%	1.1%$_a$	0.7%
– Decrease in remittances	1.9%$_a$	0.0%	0.5%$_a$	0.7%
– Other reasons	0.6%$_a$	3.7%$_{a,b}$	3.5%$_b$	2.9%
Total	100.0%	100.0%	100.0%	100.0%
Current food security status of the household compared with the situation during the past year				
– Food insecurity significantly increased	32.5%$_a$	30.4%$_a$	13.3%$_b$	25.4%
– Food insecurity somehow increased	9.6%$_a$	19.0%$_b$	20.5%$_b$	16.4%
– No change	8.4%$_a$	18.5%$_b$	31.3%$_c$	19.4%
– Food security improved	22.9%$_a$	31.0%$_a$	34.3%$_a$	29.4%
– Food security significantly improved	26.5%$_a$	1.2%$_b$	0.6%$_b$	9.4%
Total	100.0%	100.0%	100.0%	100.0%
Number of meals the household had yesterday				
1	4.8%$_a$	12.0%$_b$	6.0%$_{a,b}$	7.6%
2	59.0%$_a$	39.5%$_b$	50.0%$_{a,b}$	49.5%
3+	36.1%$_a$	48.5%$_a$	44.0%$_a$	42.9%
The average number of meals the household had the day before the survey	2.3$_a$	2.4$_a$	2.4$_a$	2.4
Total	100.0%	100.0%	100.0%	100.0%
Number	166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.

When asked to compare the current year's food security status of the household with the situation during the past year, 42% of the households reported a deterioration of the food insecurity situation; about one-fifth felt no change and 39% of the households indicated an improvement. The study households in Addis Ababa, as compared with households in other

urban sites, reported significant improvement in the food security situation during the current year (26.5% Addis Ababa, 1.2% in Hawassa, and 0.6% in Sheki).

The study had also asked households information regarding the most recent experience of food intake at the household level (number of meals the household had yesterday). As shown in Table 43, the average number of meals the household had the day before the survey was 2.4, with no significant difference across the three urban sites. The result also showed that more than 92% of households had two or more meals the day before the survey. And, well above half of the study households (57%) had less than three meals per day (64% in Addis Ababa, 52% in Hawassa, and 56% in Sheki).

5.2.2 Food Consumption Score (FCS)

FCS is calculated using the frequency of the household's consumption of different food groups during the seven days before the survey (WFP 2008). The detailed procedure for estimating the FCS was presented in section 4.4.1. Table 44 summarizes the data on the number of days the study households consumed the nine food items during the past seven days. As shown in the table, the study households at all the sites consumed staple foods nearly all days of the week. There is a slight variation in the frequency of the consumption of staple foods among the study sites, in that it was lower in Addis Ababa as compared with Hawassa and Sheki; the difference is statistically significant at 95 per cent confidence level between Addis Ababa and Sheki (6.4 versus 6.7 days).

Consumption of vegetables, fruits, pulses, oil, and sugar is significantly higher among households in Hawassa and Sheki as compared with the study households in Addis Ababa, and the difference is statistically significant. Possibly, due to high prices, consumption of milk and meat was generally low among the study households. Households in Hawassa had a

slightly higher consumption of meat and milk (about one day per week) than those in Addis Ababa and Sheki.

Table 44: The average number of days the household consumed different food items during the past seven days according to the urban hierarchy

Food Group	Addis Ababa	Hawassa	Sheki	Total
− Main staples	6.4_a	$6.5_{a,b}$	6.7_b	6.5
− Vegetables	4.6_a	6.2_b	5.9_b	5.6
− Fruits	0.3_a	1.6_b	1.7_b	1.2
− Pulses	1.1_a	3.0_b	2.7_b	2.2
− Meat (including fish and eggs)	0.4_a	0.9_b	0.5_a	0.6
− Milk	0.3_a	1.1_b	0.2_a	0.5
− Oil	4.0_a	5.0_b	4.8_b	4.6
− Sugar	1.6_a	3.2_b	3.0_b	2.6
Food Consumption Score (FCS)	26.5_a	41.7_b	35.8_c	34.7
Number	166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column means.

As shown in Table 44, the average FCS was 34.7 with significant difference ($p<.05$) across urban hierarchies. FCS was the highest at Hawassa (41.7) followed by the small-sized town Sheki (35.8), and the lowest score of 26.5 was computed for Addis Ababa. Higher FCS implies consumption of food items with a higher weight (such as milk, meat, and pulses) for more days within the week.

The cut off to identify households with poor, borderline, and acceptable food consumption group were set according to WFP (2008). According to the WFP guide, "a score of 28 is the minimum with a score below 28 reflecting a household that is not expected even to eat staples and vegetables daily and therefore was considered to have poor food consumption. Households with scores between 28 and 42 were assessed as being in borderline food consumption group, as a score of 42 reflects a household with daily staple and vegetable consumption as well as oil and pulses four times a week, which is considered a minimum for an adequate diet. A score above 42 is the acceptable range of food consumption group" (WFP 2008:9).

The overall result (Figure 14) revealed that about one-third of the households (33%) were in the range of poor food consumption. According to this measure, the percentage of households with poor food consumption group between the medium and small-sized towns (Hawassa and Sheki) was not statistically different. The percentage of households with poor food consumption group in the capital city (Addis Ababa) was, however, significantly high (at $p < .05$) compared with those in Hawassa and Sheki.

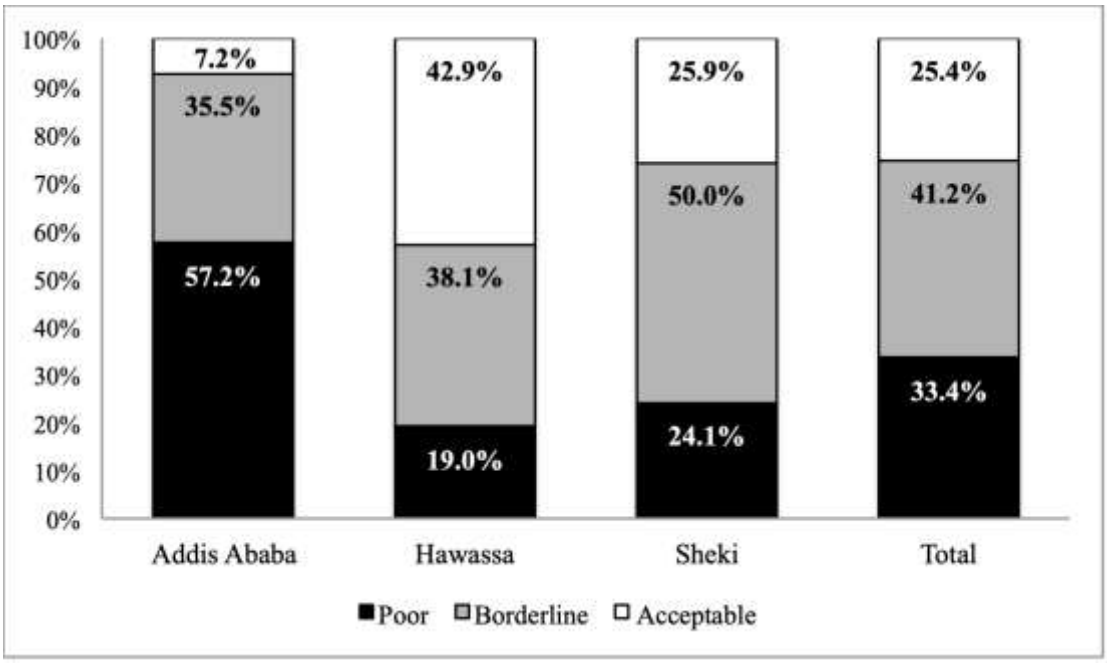


Figure 14: Percentage of households by food consumption group and according to study sites

Similarly, the study households within the range of an acceptable range of food consumption in Addis Ababa (7%) were significantly lower (at $p < .05$) than the percentage of households with acceptable FCS in Hawassa (43%) and Sheki (26%). A chi-square goodness-of-fit test also indicated that there was a significant association between food consumption group and urban hierarchies that were obtained in the sample study, $\chi^2(4, n = 500) = 89.4, p < .001$.

5.2.3 Household Food Insecurity Access Scale (HFIAS)

The Household Food Insecurity Access Scale (HFIAS) is a method based on the idea that the experience of food access causes predictable reactions (Ballard et al. 2013). The indicator is

mostly used for food security programs to measure the access component of household food insecurity. Using HFIAS along with FCS, is helpful to address both the quality, quantity, and access components of food security.

The HFIAS Questionnaire consists of two types of related questions. The first one asks whether a specific condition associated with the experience of food insecurity ever occurred during the previous four weeks. Each severity question is followed by a frequency-of-occurrence question, which asks how often the reported condition occurred during the previous four weeks. Each HFIAS frequency-of-occurrence question asks the respondent how often the condition reported in the occurrence question happened in the previous four weeks. The response is in the Likert Scale representing a range of frequencies (1 = rarely, 2 = sometimes, 3 = often).

5.2.3.1 Household Food Insecurity Access Scale (HFIAS) Score

The HFIAS score is a continuous measure of the degree of food insecurity (access) in the household in the past four weeks. The HFIAS score variable is calculated for each household by summing the codes for each frequency-of-occurrence question. The maximum score for a household is 27 if the household response to all nine frequency-of-occurrence questions was "often", which is coded with response code of 3; the minimum score is 0, in which case the household responded "no" to all occurrence questions, frequency-of-occurrence questions.

The HFIAS questions were structured to have three domains anxiety and uncertainty, insufficient quality, and insufficient food intake and its physical consequences. The indicators (Table 45) provide summary information on the prevalence of households experiencing one or more behaviours in each of the three domains reflected in the HFIAS. Nearly three-fourth of the study households (74%) worried that their household would not have enough food indicating higher anxiety and uncertainty about the household food supply. The level of

anxiety and uncertainty varied significantly ($p<0.05$) between the study sites (51% in Addis Ababa, 73% in Hawassa, and 97% in Sheki).

Table 45: Household's behaviours and perceptions about food security across the urban hierarchy

	Addis Ababa	Hawassa	Sheki	Total
Anxiety and uncertainty about the household food supply				
— Percentage of households worried that their household would not have enough food	51.2%$_a$	73.2%$_b$	97.0%$_c$	73.8%
Insufficiency of the quality including variety and preferences of the type of food				
— Percentage of households with any member who was not able to eat the kinds of foods they preferred because of a lack of resources	66.3%$_a$	91.7%$_b$	100.0%$_c$	86.0%
— Percentage of households with any member who had to eat a limited variety of foods due to a lack of resources	66.3%$_a$	91.7%$_b$	100.0%$_c$	86.0%
— Percentage of households with any member who had to eat some foods that they did not want to eat because of a lack of resources to obtain other types of food	63.3%$_a$	84.5%$_b$	99.4%$_c$	82.4%
Percentage of households experiencing any one of the three conditions	*71.7%$_a$*	*94.6%$_b$*	*100.0%$_c$*	*88.8%*
Insufficient food intake and its physical consequences				
— Percentage of households with any member who had to eat a smaller meal than felt needed because there was not enough food	63.9%$_a$	79.2%$_b$	98.8%$_c$	80.6%
— Percentage of households with any other member who had to eat fewer meals in a day because there was not enough food	54.2%$_a$	75.6%$_b$	95.8%$_c$	75.2%
— Percentage of households with no food to eat of any kind in the household because of lack of resources to get food	38.6%$_a$	61.3%$_b$	70.5%$_b$	56.8%
— Percentage of households with any member who had to go to sleep at night hungry because there was not enough food	33.1%$_a$	53.6%$_b$	76.5%$_c$	54.4%
— Percentage of households with any member who had to go a whole day and night without eating anything because there was not enough food	26.5%$_a$	45.2%$_b$	48.8%$_b$	40.2%
Percentage of households experiencing any one of the five conditions	*67.5%$_a$*	*85.7%$_b$*	*99.4%$_c$*	*84.2%*
HFIAS Score	7.8$_a$	11.5$_b$	16.9$_c$	12.1
Number	166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at $p< .05$ in the two-sided test of equality for column means.

Insufficiency of food in terms of quality and variety was reported by 89% of the study households with a significant difference (at $p < .05$) between Addis Ababa and the other sites (Hawassa and Sheki) where nearly all households experienced the condition (72% in Addis Ababa, 95% in Hawassa, and 100% in Sheki).

Insufficiency of food implies that households were not able to eat the kinds of foods they preferred because of a lack of resources to obtain other types of food. Insufficient food intake was reported by 84% of the households with significant difference (at $p < .05$) among households (68% in Addis Ababa, 86% in Hawassa, and 99% in Sheki). Here insufficient food intake refers that households eat a smaller meal than felt needed, eat fewer meals in a day, no food to eat of any kind, go to sleep at night hungry, or go a whole day and night without eating anything.

The minimum and maximum HFIAS score range between 0 and 27. The higher the score, the more food insecurity (high food access) the household experienced. The lower the score, the less food insecurity (low food access) the household experienced. The overall HFIAS score of the study households is 12.1. However, food insecurity (access) varies significantly across the urban hierarchy 7.8 in Addis Ababa, 11.5 in Hawassa, and 16.9 in Sheki indicating increase in the level of food insecurity (access) as one goes from the big city to small-sized towns.

5.2.3.2 Household Food Insecurity Access Prevalence (HFIAP)

The second measure of food insecurity derived from the household data is a categorical indicator - Household Food Insecurity Access Prevalence (HFIAP) Status indicator. The indicator is widely used to report household food insecurity (access) prevalence and make comparison across different groups or geographic locations. The HFIAP indicator categorizes

households into four levels of household food insecurity (access): food secure, mildly food insecure, moderately food insecure, and severely food insecure.

Overall, about two-thirds of the study households (65%) were severely food insecure (access). The prevalence of food access insecurity strongly varies ($p<0.05$) among the study sites that range between 89% among the households in the small-sized town (Sheki) to 42% among study households in the big city (Addis Ababa) and the medium-sized town (Hawassa) in the middle. As shown in Figure 15, only about one in every ten of the study households was food secure. The proportion of food secure (access) households was higher in Addis Ababa (27%) as compared with the households in Hawassa and Sheki, where only 5% and 1% respectively were food secure. The difference in the level of food access security between households in the big city and the small- and medium-sized towns is statistically significant (at $p<.05$).

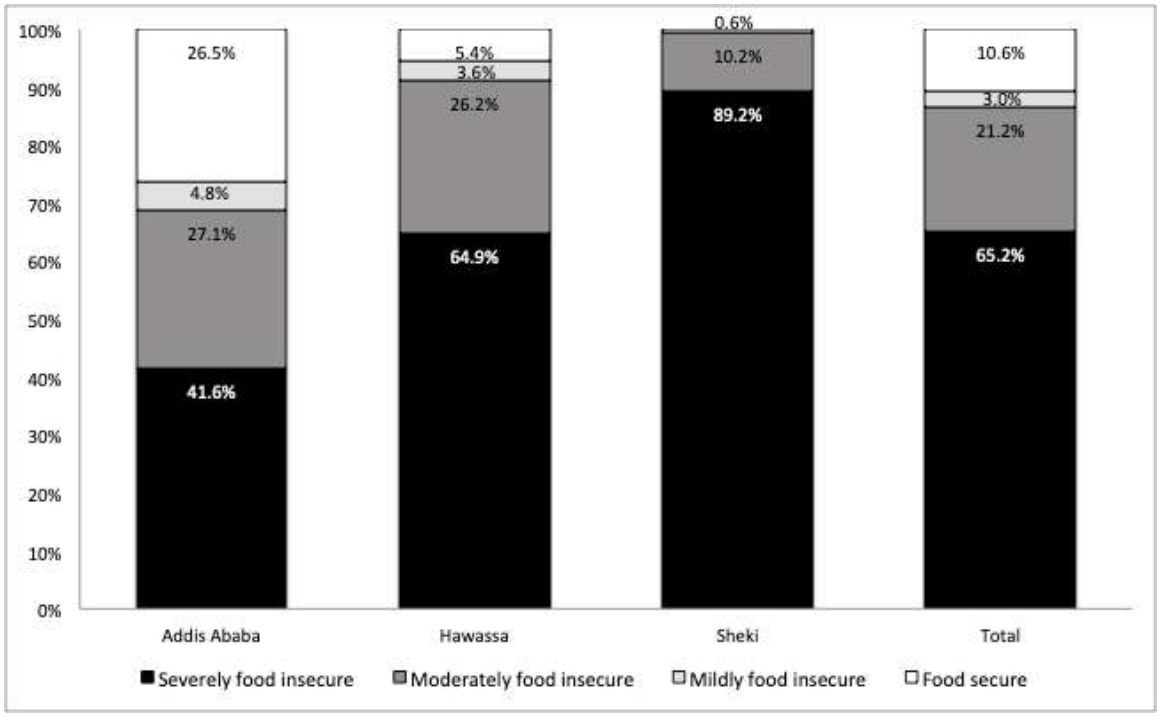


Figure 15: The levels of household food access insecurity along the continuum of the urban hierarchy

5.2.4 Coping with Food Access Insecurity among the Study Households

The previous subsections have presented different measures of food insecurity among the study households along the continuum of the urban hierarchies such as the prevalence of food insecurity as measured by incidence of food shortages during the past year and food intake of the household the day before the survey. Analysis of more comprehensive measures of household food insecurity, such as FCS and HFIAS, were also presented. The results so far revealed a higher level of food access insecurity among the study households, which is the basis for the analysis of how these households strive to cope with food access insecurity.

5.2.4.1 Coping Strategies of Households with Food Access Insecurity

Food insecure households are not unresponsive in situations when food access is challenged. A coping strategy is a strategy adopted by households when the level of shock or insecurity pushes them beyond the difficulties faced in regular times (Subedi& Kent 2018). As revealed in Table 46, the study households along the continuum of urban hierarchies have adopted a range of coping strategies during times of food access insecurity. The main coping strategies were compromising household food consumption and raising financial resources to buy food. The strategies related to compromising the household food consumption includes relying on less preferred and less expensive foods, limiting portion size of meals, and reducing numbers of meals eaten in a day that is experienced by more than three-fourth of the study households.

Despite the strategies being adopted by most households, there was a significant difference among the study sites in the use of the coping strategies along the continuum of urban hierarchies (at $p <. 05$). The pervasiveness of the strategies generally decreases with an increase in the size of an urban area. For instance, the percentage of households who adopted reducing the number of meals eaten in a day was 52% in Addis Ababa, 86% in Hawassa, and 96% in the small-sized town (Sheki).

Similarly, 58% in Addis Ababa, 89% in Hawassa, and 96% in Sheki adopted limiting portion size at mealtimes. Sending children to other families to get food has also been reported by a relatively higher percentage of households in small- and medium-sized towns. Financial strategies such as being engaged with elementary jobs, reducing non-food household expenses, migration of adult members of the household in search of a job, borrowing money or food items, selling household durable assets (ex. TV, refrigerator, and the likes), and withdrawing children from the school were adopted by a higher percentage of study households in Hawassa ($p < .05$). These strategies were least adopted among the study households in Addis Ababa.

Table 46: Percentage distribution of the different mechanisms adopted by households across urban hierarchies to cope with food insecurity

Coping mechanisms	Addis Ababa	Hawassa	Sheki	Total
Compromising food consumption				
– Rely on less preferred and less expensive foods	82.5%$_a$	96.4%$_b$	97.6%$_b$	92.2%
– Borrow food, or rely on help from a friend or relative	32.5%$_a$	41.1%$_a$	74.1%$_b$	49.2%
– Limit portion size at mealtimes	57.8%$_a$	89.3%$_b$	96.4%$_c$	81.2%
– Reduce the number of meals eaten in a day	52.4%$_a$	85.7%$_b$	96.4%$_c$	78.2%
– Restrict consumption by adults for small children to eat	42.2%$_a$	80.4%$_b$	53.0%$_a$	58.6%
– Sending children to other families to get food	3.0%$_a$	7.1%$_{a,b}$	10.2%$_b$	6.8%
Financial strategies				
– Borrow money or food items	4.2%$_a$	23.8%$_b$	10.8%$_a$	13.0%
– Borrow money or food with a high-interest rate	5.4%$_a$	3.6%$_a$	2.4%$_a$	3.8%
– Adult members of the household migrate in search of job	1.2%$_a$	30.5%$_b$	13.9%$_c$	15.3%
– Being engaged with elementary jobs	6.6%$_a$	46.1%$_b$	13.9%$_a$	22.2%
– Selling household durable assets (Ex. TV and Refrigerator.)	4.2%$_a$	18.6%$_b$	3.6%$_a$	8.8%
– Selling livestock	0.0%	8.4%$_b$	7.2%$_b$	5.2%
– Reducing non-food household expenses	3.0%$_a$	36.9%$_b$	15.7%$_c$	18.6%
– Withdrawing students from school	3.6%$_a$	15.0%$_b$	8.4%$_{a,b}$	9.0%
Number	166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at $p< .05$ in the two-sided test of column proportions.

5.2.4.2 Coping Strategy Index (CSI)

Coping Strategy Index (CSI) is an index developed from a set of questions about the strategies that households adopted to cope with the situation of insufficient food. The CSI measures household stress due to food access insecurity through the frequency and severity of behaviours undertaken in response to the stress encountered (Maxwell & Caldwell 2008; Subedi & Kent 2018). In other words, the CSI is an indicator of a household's food security assessing the extent to which households use harmful coping strategies when they do not have enough food or enough money to buy food.

In this study, a reduced Coping Strategy Index (rCSI) is used, which is an index with fewer but universal coping actions of food consumption, the one applied to multiple contexts (Maxwell & Caldwell 2008). The rCSI is developed based on five universal food consumption related strategies. The list of coping strategies and the corresponding weights and other technical details for computing CSI is presented in section 4.3.3.

The rCSI result is reported in a numeric score ranging between 0 (if none of the coping strategies applied during the whole week) and 56 (if all the coping mechanisms were applied for seven days); the higher the CSI score, the more severe/stressful the coping is. The rCSI score is a product of the frequency (number of days) with which coping strategy was used and the severity weight. The scores for each coping strategy are added together to give a composite score at a household level.

Table 47 presents the average number of days that households adopted the five universal strategies to cope with food insecurity during the week before the survey, and the result is presented according to study sites along the continuum of urban hierarchies.

According to the result, relying on less preferred and less expensive foods, limiting portion size at mealtimes, and reducing the number of meals eaten in a day were the three most frequently used strategies adopted by study households to cope with food access insecurity. Households adopted relying on less preferred and less expensive foods for an average of 4.7 days. However, the frequency of applying these strategies varies significantly (at $p<.05$) across the urban hierarchies. According to the result, the most stressful strategies were applied among households in the small-sized town (Sheki), followed by households in Hawassa (medium-sized town), and the stressful strategies were least experienced in Addis Ababa.

Table 47: The average number of days that households adopt strategies to cope with food insecurity during the past week along the continuum of urban hierarchies

	Addis Ababa	Hawassa	Sheki	Total
Number of days households rely on less preferred and less expensive foods	3.7_a	4.7_b	5.8_c	4.7
Number of days households borrow food or rely on help from a friend or relative	1.0_a	1.1_a	2.3_b	1.5
Number of days households limit portion size at mealtimes	1.7_a	3.4_b	4.4_c	3.2
Number of days households restrict consumption by adults to feed young children	1.3_a	3.3_b	1.9_c	2.2
Number of days households reduce the number of meals eaten in a day	1.3_a	3.1_b	4.5_c	3.0
rCSI score	12.5_a	23.3_b	24.9_b	20.3
CSI category				
Low coping	$20.5\%_a$	$4.2\%_b$	$1.2\%_b$	8.6%
Medium coping	$33.7\%_a$	$16.7\%_b$	$9.6\%_b$	20.0%
High/distress coping	$45.8\%_a$	$79.2\%_b$	$89.2\%_c$	71.4%
Total	100%	100%	100%	100%
Number	166	168	166	500

Note: Values in the same row not sharing the same subscript are significantly different at $p< .05$ in the two-sided test of column proportions.

The frequency of the application of the other strategies (restricting consumption by adults to feed young children and borrowing food, or relying on help from a friend or relative) among the study households was relatively lower. The difference along the continuum of urban

hierarchies follows a similar pattern with the previously cited strategies. Households in small-sized towns were generally the ones applying stressful actions to cope with food access insecurity.

The overall rCSI score of the study households was 20.3 (12.5 in Addis Ababa, 23.3 in Hawassa, and 24.9 in Sheki). The rCSI score in Addis Ababa was significantly higher than Hawassa and Sheki ($p<0.05$) whereas the difference in the rCSI score between Hawassa and Sheki was statistically insignificant.

The classification of the households based on rCSI score gives a much understandable explanation of the level of the coping experience. The study households were classified into low coping, medium coping, and high coping strategies as described earlier. Accordingly, 9% of the households were classified as having low stress to cope with food access insecurity, one-fifth of the households (20%) were classified as having a medium coping, and most of the study households (71%) were in distress coping. Looking into the variation across the urban hierarchies 46% of the study households in Addis Ababa, 79% of the households in Hawassa, and 89% of the study households in Sheki were in the high/distress coping. The result suggested that the level of stress in coping with food access insecurity increases with a decrease in the size of an urban area.

5.3 Factors Associated with Coping with Food Access Insecurity

The previous two sections have provided the demographic and socio-economic characteristics of the study households and detailed description of indicators of the food security status of households. The purpose of this section is to examine the level of significance of the association between coping and each one of the factors such as household structure and composition, household economic resources (including sources of household

income, housing ownership, and asset ownership), urban-rural social linkage, productive safety net programs, and micro and small business development support services

5.3.1 Household Structure and Composition and Coping with Food Access Insecurity

Descriptive Statistics and chi-square tests of the coping strategy by household structure, household size and the characteristics of the head of the households (such as age, gender, education level, migration status, and marital status) are shown in Table 48.

A chi-square test was performed to examine the relation between CSI category and age of the head of the household revealed that households led by older heads were less likely to be under stress in coping with food access insecurity than households led by the younger heads were. The relation between these variables was significant, χ^2 (4, N = 500) = 11.36, p <.05.

Similarly, a chi-square test of to examine the relation between the CSI category and gender of the head of the household showed that households led by female heads were less likely to be under coping stress than households led by the male heads. The relation between these variables was significant, χ^2 (2, N = 500) = 7.35, p <.05. It has also been found that households led by heads with higher educational level were less likely to be under stress in Coping with food access insecurity than households led by the less educated heads. The relation between these variables was significant, χ^2 (4, N = 500) = 19.68, p <.05. The chi-square test also affirms that households with the extended household structure were less likely to be under stress in Coping with food access insecurity than nuclear households. The relation between these variables was significant, χ^2 (2, N = 500) = 8.70, p <.05.

Migration status and marital status of the head of the household did not show significant association with the coping behaviour of the households under food insecurity stress. Similarly, CSI was found not significantly related to household size. However, Pearson

correlation of CSI and the ratio of children aged below 14 years of age in each household were significantly correlated, r (498) = .167, p < .001. The result revealed that not the total size of the household, but the proportion of the young age dependents is related to the household stress in coping with food access insecurity.

Table 48: Results of descriptive statistics for coping strategy by background characteristics and Chi-square Test

Socio-demographic characteristics of the head of the household		CSI category				Number	Chi-Square Tests
		Low coping	Medium coping	High / distress coping	Total		
Age	Below 29	0.0%	6.9%	93.1%	100.0%	29	χ^2 (4) = 11.36, p = .023*
	30-60	7.9%	21.3%	70.9%	100.0%	381	
	Above 60	14.4%	18.9%	66.7%	100.0%	90	
Gender	Female	7.6%	24.8%	67.6%	100.0%	250	χ^2 (2) = 7.353, p = .025*
	Male	9.6%	15.2%	75.2%	100.0%	250	
Education level	Illiterate	6.8%	13.0%	80.2%	100.0%	177	χ^2 (4) = 19.68, p =.001**
	Primary	6.6%	23.5%	69.9%	100.0%	226	
	Secondary +	16.5%	24.7%	58.8%	100.0%	97	
Migration status	Non-migrant	5.7%	23.6%	70.7%	100.0%	157	χ^2 (2) = 3.660, p =.160
	Migrant	9.9%	18.4%	71.7%	100.0%	343	
Marital status	Married	7.5%	17.9%	74.6%	100.0%	307	χ^2 (6) = 5.71, p =.456
	Divorced	7.5%	24.5%	67.9%	100.0%	53	
	Widowed	10.9%	22.5%	66.7%	100.0%	129	
	Never married	18.2%	27.3%	54.5%	100.0%	11	
Household structure	Nuclear	6.3%	19.7%	74.1%	100.0%	351	χ^2 (2) = 8.70, p =.013*
	Extended	14.1%	20.8%	65.1%	100.0%	149	
Household size	1-2	5.1%	24.4%	70.5%	100.0%	78	χ^2 (6) = 5.034, p =.539
	3-4	8.0%	22.0%	70.0%	100.0%	200	
	5-6	10.0%	18.0%	72.0%	100.0%	150	
	7+	11.1%	13.9%	75.0%	100.0%	72	
	Percentage of children aged below 14 years	19%	22%	26%	25%	500	
	Total	8.6%	20.0%	71.4%	100.0%		
	Number	43	100	357		500	

5.3.2 Household Economic Resources and Coping with Food Access Insecurity

In this study, the term economic resource has a broader meaning encompassing both income and assets. Income denotes the inflow of financial resources while assets refer to only physical assets that include housing, machines, equipment, tools, and other tangible

components of production; durable household goods; valuables, and livestock (Oliver & Shapiro 2013). To be able to investigate the role of the different forms of the assets in coping with food access insecurity, the study treated housing ownership and other durable assets separately.

5.3.2.1 Sources of Household Income and Coping with Food Access Insecurity

The relationship between coping with food access insecurity and sources of household income shows a significant relationship, χ^2 (12, N = 497) = 48.14, p <.005. A relatively higher proportion of households earning their living from the regular salary, social protection (including pension), and remittances had low stress in coping with food access insecurity as compared with those earning income from daily labour and small businesses (Table 49).

Table 49: Results of descriptive statistics for CSI category by the source of household income and Chi-square test of the relationship

Source of household income	Coping categories				Number
	Low coping	Medium coping	High/distress coping	Total	
Regular salary	15.9%	34.1%	50.0%	100.0%	82
Casual labour	4.7%	14.5%	80.8%	100.0%	214
Agricultural activities	0.0%	16.7%	83.3%	100.0%	6
Small businesses	5.8%	23.3%	70.9%	100.0%	86
Social protection (including pension)	21.8%	20.0%	58.2%	100.0%	55
Remittance	10.3%	20.7%	69.0%	100.0%	29
Other income sources (begging, prostitution and the like)	0.0%	8.0%	92.0%	100.0%	25
Total	8.7%	19.9%	71.4%	100.0%	497

χ^2 (12, N = 497) = 48.14, p <.005.

5.3.2.2 Housing Ownership and Coping with Food Access Insecurity

Most of the study households in Addis Ababa 155(93%) and Hawassa 163(97%) do not own a residential house; more than half of the households 90(54%) in the small-sized town of Sheki, however, have their own residential house. A chi-square test performed to examine the

association between CSI category and possession of a residential house. As revealed in Table 50, households who own a residential house were under stress in Coping with food access insecurity than households who do not have, χ^2 (2, N = 500) = 6.43, p <.05.

Table 50: Results of descriptive statistics for CSI category by house ownership, study site and Chi-square test of the relationship

Study site	Household housing ownership	CSI category				Number	Chi-Square Tests
		Low coping	Medium coping	High coping	Total		
All sites	Households who do not own a house	9.1%	22.1%	68.8%	100.0%	394	χ^2 (2) = 6.43, p = .040*
	Households who own a house	6.6%	12.3%	81.1%	100.0%	106	
	Total	8.6%	20.0%	71.4%	100.0%	500	
Addis Ababa	Households who do not own a house	18.7%	36.1%	45.2%	100.0%	155	χ^2 (2) = 7.76, p = .021*
	Households who own a house	45.5%	0.0%	54.5%	100.0%	11	
	Total	20.5%	33.7%	45.8%		166	
Hawassa	Households who do not own a house	3.7%	16.6%	79.8%	100.0%	163	χ^2 (2) = 3.37, p = .185
	Households who own a house	20.0%	20.0%	60.0%	100.0%	5	
	Total	4.2%	16.7%	79.2%		168	
Sheki	Households who do not own a house	1.3%	5.3%	93.4%	100.0%	76	χ^2 (2) = 3.084, p = .214
	Households who own a house	1.1%	13.3%	85.6%	100.0%	90	
	Total	1.2%	9.6%	89.2%		166	

However, analysis of the relationship between CSI category and possession of a residential house for each study sites revealed that the relationship was statistically significant only for the study households in Addis Ababa, χ^2 (2, N = 166) = 7.76, p <.05. The association between CSI category and possession of a residential house was not significant for the study households in Hawassa χ^2 (2, N = 168) = 3.37, p =.185 and Sheki χ^2 (2, N = 166) = 3.08, p =.214.

5.3.2.3 Asset Ownership and Coping with Food Access Insecurity

Because the list of the household durables (31 items) is extensive, an asset index was generated with the application of principal component analysis (PCA). The asset scores then were divided into five quintiles poorest, second, middle, fourth, and most affluent. Table 51

presents a bivariate table of CSI category by the asset index. The analysis of the relationship between CSI category and asset index revealed a strong, statistically significant relationship, χ^2 (8, N = 500) = 65.73, p <.05.

Even though the sample households were chosen from among food insecure slum dwellers, the difference in asset index categorized as "high" and "low" is relative but revealed a significant association with the level of Coping with food access insecurity stress.

Table 51: Bivariate table for CSI category by asset index and Chi-square test of the relationship

Asset index	CSI category				Number	Chi-Square Tests
	Low coping	Medium coping	High coping	Total		
1- Low	2.9%	6.9%	90.2%	100.0%	64	
2	4.1%	20.4%	75.5%	100.0%	31	
3	5.2%	29.2%	65.6%	100.0%	159	χ^2 (8) = 65.73,
4	7.0%	18.4%	74.6%	100.0%	213	p = .000*
5 - High	25.6%	26.7%	47.8%	100.0%	33	
Total	8.6%	20.0%	71.4%	100.0%	500	

The result is consistent that the level of stress in coping with food access insecurity decreases with an increase in assets. More than 90% of households with the lowest assets were in the high coping category compared to only half of the households with a higher level of assets. Similarly, more than a quarter (26%) of households with the highest asset index had low coping compared to only 3% of those with low asset index.

5.3.3 Urban-Rural Linkage and Coping with Food Access Insecurity

The analysis of the relationship between the level of urban-rural linkages and CSI category revealed to have a statistically significant association, χ^2 (8, N = 500) = 16.42, p <.05. Despite this relationship being significant one might not see the pattern of the association in Table 52.

The level of association between the two variables differs across the urban hierarchies. Results of the Pearson correlation for both the total samples and Addis Ababa city indicated that there was no significant association between CSI category and the level of urban-rural social linkage; for the total sample, ($r(498) = -.011$, $p = .802$); and for Addis Ababa, ($r(164) = .023$, $p = .766$).

Table 52: Bivariate table for CSI category by the level of urban-rural linkages and Chi-square test of the relationship

Level of urban-rural social linkage	CSI category				Number	Chi-Square Tests
	Low coping	Medium coping	High coping	Total		
1- Low	10.5%	24.3%	65.1%	100.0%	152	
2	4.3%	10.6%	85.1%	100.0%	47	
3	2.9%	25.0%	72.1%	100.0%	104	χ^2 (8) = 16.42, p = .037*
4	13.6%	22.7%	63.6%	100.0%	22	
5 - High	10.9%	15.4%	73.7%	100.0%	175	
Total	8.6%	20.0%	71.4%	100.0%	500	

However, the relationship between the two variables was more substantial and significant for the small-sized town (Sheki), ($r(164) = -.25$, $p = .001$). Figure 16 shows the pattern of the association between the two variables separately for each study site in a much better way. The association between the two variables gets more robust and significant towards the medium and small urban sites, a slightly weaker negative association between CSI category and the level of urban-rural linkages in Hawassa, ($r (166) = -.149$, $p = .053$) was revealed.

As can be learned from the pattern in figure 16, aggregation mystifies the real relationship between the two variables. Looking into the separate figures for the study sites there exist a visible pattern of association. The trend line of the coping score by the level of urban-rural linkages among the households in small- and medium-sized towns revealed that households with a lower level of linkage have higher stress in coping with food insecurity. The pattern of the relationship between urban-rural linkages and coping in Addis Ababa is irregular, and it shows almost a constant pattern when the data is compiled for all sites together.

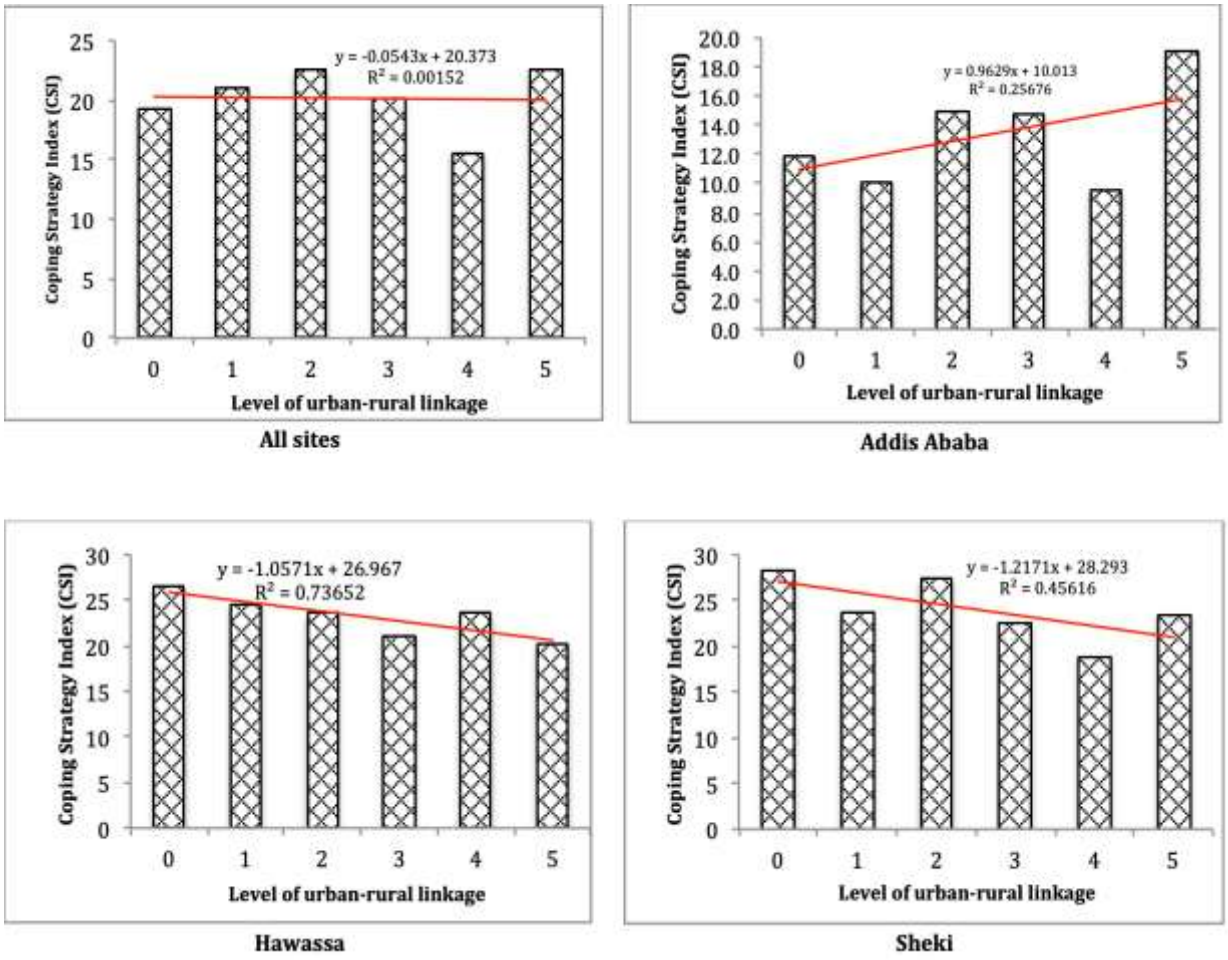


Figure 16: Relationship between coping and level of urban-rural social linkage

5.3.4 Productive Safety Net Programs and Coping with Food Access Insecurity

According to the national social protection policy of Ethiopia, the Productive Safety Net Programs (PSNP) is sought to provide predictable cash and/or food transfers to chronically food-insecure households to improve their resilience to shocks (Ministry of Labour and Social Affairs 2012). The Board of Executive Directors of the World Bank Groups approved US$300 million credit to Ethiopia for the implementation of UPSNP on December 16, 2015 (Press release by the World Bank (2016). This grant aimed to reduce poverty and vulnerability among the urban poor living below the poverty line. According to the current

study, 54% of the interviewed households were active participants of the UPSNP programme implemented by government and non-government actors with varying proportion across the study sites, 54% in Addis Ababa, 99% in Hawassa, and only 8% in the small-sized town of Sheki.

Table 53: Relationship between CSI category and access to PSNP programme and Chi-square test

Level of urban-rural social linkage	CSI category				Number	Chi-Square Tests
	Low coping	Medium coping	High coping	Total		
Households with access to PSNP	6.9%	19.9%	73.2%	100.0%	152	
Households without access to PSNP	10.0%	20.1%	69.9%	100.0%	47	χ^2 (2) = 1.57, p = .452
Total	8.6%	20.0%	71.4%	100.0%	500	

The association between CSI category and participation in PSNP is not significant, χ^2 (2, N = 500) = 1.57 that PSNP has not yet contributed to lower the stress in coping with food access insecurity among the destitute urban households.

5.3.5 Micro and Small Business Development Support Services and Coping with Food Access Insecurity

Micro and small enterprises in Ethiopia are expected to have a significant role in poverty alleviation. The poverty reduction strategy of Ethiopia (National Planning Commission 2016) has stipulated a framework for the creation of job opportunity for the unemployed youth through the promotion of micro and small enterprise, with substantial support to access credit, training, technology, and information.

According to the result of this study, it was revealed that there was an association between households who had savings/loan from a microfinance institution and CSI category, χ^2 (2, N = 500) = 7.58, $p < .05$. Coping with food access insecurity and participation of the household in a traditional saving scheme *Equib* was not statistically significant, χ^2 (2, N = 500) = 5.16, p

< .10. The association between households accessing some services from a micro and small-scale business office and CSI category was not significant, χ^2 (2, N = 500) = 5.53, p < .10.

Table 54: Bivariate relationship between CSI category and participation of the household in micro and small business development programmes

Participation in micro and small business development programmes		CSI category				Number	Chi-Square Tests
		Low coping	Medium coping	High coping	Total		
Households who had savings/loan from a microfinance institution over the past year	No	8.0%	18.2%	73.8%	100.0%	423	χ^2 (2) = 7.58, p = .023*
	Yes	11.7%	29.9%	58.4%	100.0%	77	
	Total	8.6%	20.0%	71.4%	100.0%	500	
Households who benefited from a micro and small-scale business support service over the past year	No	8.1%	19.6%	72.3%	100.0%	480	χ^2 (2) = 5.53, p = .063
	Yes	20.0%	30.0%	50.0%	100.0%	20	
	Total	8.6%	20.0%	71.4%	100.0%	500	
Households who participated in "Equib" over the past year	No	7.7%	18.7%	73.6%	100.0%	402	χ^2 (2) = 5.16, p = .076
	Yes	12.2%	25.5%	62.2%	100.0%	98	
	Total	8.6%	20.0%	71.4%	100.0%	500	

5.4 Multivariate Analysis of Coping with Food Access Insecurity

A regression technique is a useful method in survey research of the real world to deal with complicated problems that cannot be meaningfully reduced to a laboratory setting. Tabachnick and Fidell (2014) and Pallant (2016) suggest the use of a standard multiple regression to assess relationships among variables and answer the fundamental research question of multiple correlations. The standard regression analysis in this section is based on a survey of households in three urban sites. And, the analysis is done separately for the three study sites (Addis Ababa, Hawassa, and Sheki) along the continuum of the urban hierarchy representing the big city, medium-sized town, and small-sized town. Factors in these models are selected based on the conceptual framework and considering the significance of the relationship between coping and each predictor as discussed in the bivariate analysis (Section

5.3). The first subsection next presents the model specification, which is followed by a detailed presentation and interpretation of the results of the regression model.

5.4.1 Model Specification

The dependent variable (DV) of this study is the level of the stress on households to cope with food access insecurity when the household runs out of food stock or when it does not have money to buy food needed by the household during the seven days before the survey. The DV is measured by the revised coping strategy index (rCSI), which is a continuous variable developed from a set of five questions related to the household behaviour to cope with the situation of insufficient food (Maxwell & Caldwell 2008; Subedi & Kent 2018).

The independent variables (IVs) were selected based on the conceptual framework of the study and considering the significance of the relationship between coping and each factor discussed in the bivariate analysis (Section 5.3). The independent variables can be broadly classified into four categories: 1) Household structure and composition, 2) Economic resource, 3) Social protection, and 4) Urban-rural social linkage. For household structure and composition, five measures were used: age, sex, and educational level of the head of the household, percentage of young children aged below 14 years in the household, and household structure (nuclear versus extended). The next set of measurements looked were economic resources represented by two measures: asset index and source of household income. Access to social protection programme was represented by two measures: access to urban productive safety net programs (UPSNP) and access to loan from microfinance institutions. The fourth category of variables included was the household's linkage with the kin structure in rural areas. As shown in section 5.3, all the IVs (except for access to PSNP) have a significant level of association with coping (the DV) in bivariate analysis. Despite not

showing a significant association, however, access to PSNP was included in the model as the theoretical framework of the study supports it.

A standard multiple regression analysis was performed between the DV (coping index of food access insecurity) and the IVs. The analysis was performed using IBM SPSS regression. A linear model of the form $Y= \beta_0 +X_1\beta_1 + X_2\beta_2 + X_3\beta_3 + \ldots + \beta_{13} X_{13}+ \varepsilon$ relating Y and the 13 explanatory variables is assumed.

Table 55: Description of variables in the regression model

Variable	Description
Y	Coping with food access insecurity
βi	Regression Coefficients
X_1	Age
X_2	Gender
X_3	Education
X_4	The ratio of children aged below 14 years of age in the household
X_5	Household structure
X_6	Asset index score
X_7	Daily labour
X_8	Small business
X_9	Remittances
X_{10}	Other miscellaneous income sources (rent income, begging, prostitution, etc.)
X_{11}	Urban-rural social linkage
X_{12}	Access to urban productive safety net programs (UPSNP)
X_{13}	Access to loan from a microfinance institution
ε	Error term

5.4.2 Interpretation of the Results of the Regression Model

5.4.2.1 Model Summary

Four separate standard regression analysis models were constructed to investigate the IVs predicting coping with food access insecurity. These were a global model (for the total sample) and three models corresponding to each of the study sites along the urban hierarchy - big city (Addis Ababa), medium-sized town (Hawassa), and small-sized town (Sheki). Tables 56 and 57 presented the key results of the model such as unstandardized regression

coefficients (B) and intercept, the standardized regression coefficients (β), the Standard Error, t-distribution, significance level, R^2, and adjusted R^2. The full IBM SPSS Regression output is shown in Annex B.

All the models significantly explained a significant amount of the variance in the DV: global model ($F (13, 486) = 10.755$, $p < .001$, $R^2 = .223$, $R^2_{Adjusted} = .203$); small-sized town model ($F (13, 152) = 6.725$, $p < .001$, $R^2 = .365$, $R^2_{adjusted} = .311$); medium-sized town model ($F (13, 154) = 5.391$, $p < .001$, $R^2 = .313$, $R^2_{adjusted} = .255$) and big-city model ($F (13, 152) = 2.336$, $p < .01$, $R^2 = .166$, $R^2_{adjusted} = .095$). The global model revealed that the IVs explain 22% of the variance in coping with food access insecurity (the IVs uniquely explained 18.2% of the variance while 4% of the variation was a combined effect of the IVs). Nevertheless, the variance in the DV that comes from the IVs in the site-specific models showed a considerable difference. The IVs explained 37% of the variation in small-sized town - Sheki (26% uniquely explained by the IVs, and 11% was a combined effect); in the medium-sized town - Hawassa the IVs explained 31% of the variance in the DV (16% uniquely explained by the IVs and 17% was a combined effect), and the IVs in the big city - Addis Ababa explained 17% of the variation in the DV (the IVs uniquely explained 12% and 5% was a combined effect). The result indicates that the IVs were stronger in explaining the variability in coping with food access insecurity in small- and medium-sized towns than the big city.

Table 56: Multiple linear regression analyses of Coping with food access insecurity among slum dwellers – the global model

	B	Std. Error	β	t	Sig.	
(Constant)	14.25	3.08		4.63	0.000	
Household structure and composition						
– **Age**	-0.04	0.04	-0.04	-0.85	0.396	
– **Gender**	3.90	1.10	0.16	3.55	0.000****	
– **Education**	-2.17	0.80	-0.13	-2.70	0.007***	
– **The ratio of children aged below 14 years of age in the household**	8.61	2.42	0.16	3.56	0.000****	
– **Household structure** (extended vs. nuclear)	-1.13	1.10	-0.04	-1.03	0.304	
Economic resources						$R^2 = .223$
– **Asset index**	-3.32	0.55	-0.27	-6.01	0.000****	$R^2_{adjusted} = .203$
– **Source of income**						No. Observations = 500
○ Salary (reference category)						F (13, 486) = 10.755, p < .001
○ Casual labour	6.09	1.48	0.25	4.12	0.000****	
○ Small business	2.31	1.78	0.07	1.30	0.195	
○ Pensions and remittances	3.03	1.78	0.10	1.71	0.088*	
○ Other miscellaneous income sources *(this includes rent income, begging, prostitution)*	6.10	2.39	0.12	2.55	0.011**	
Urban rural linkage	0.21	0.31	0.03	0.67	0.502	
Social protection						
– **Access to UPSNP**	3.56	1.09	0.15	3.28	0.001***	
– **Access to loan from micro finance institution**	-2.89	1.43	-0.09	-2.02	0.044**	

Note. N = 500; * p<.1, ** p<.05, *** p<.01, **** p<.001

Table 57: Multiple linear regression analyses of Coping with food access insecurity among slum dwellers across urban hierarchies (small, medium and big city)

Independent variable	Sheki (small-sized town)					Hawassa (medium-sized town)					Addis Ababa (big city)				
	B	Std. Error	β	t	Sig.	B	Std. Error	β	t	Sig.	B	Std. Error	β	t	Sig.
(Constant)	24.12	4.60		5.24	0.000	8.72	9.45		0.92	0.358	9.35	4.90		1.91	0.058
Household structure and composition															
– **Age**	0.00	0.06	0.00	-0.04	0.965	0.00	0.07	0.00	0.01	0.990	0.06	0.07	0.09	0.85	0.397
– **Gender**	1.26	1.60	0.06	0.79	0.432	1.75	1.87	0.07	0.94	0.350	-3.41	2.00	-0.15	-1.71	0.090*
– **Education**	-2.77	1.18	-0.19	-2.35	0.020**	-0.32	1.37	-0.02	-0.23	0.815	-1.44	1.23	-0.11	-1.17	0.243
– **The ratio of children aged below 14 years of age in the household**	17.72	3.61	0.40	4.91	0.000****	9.90	4.78	0.16	2.07	0.040**	3.94	3.45	0.09	1.14	0.256
– **Household structure** (extended vs. nuclear)	-1.16	1.95	-0.04	-0.59	0.553	1.07	1.64	0.05	0.66	0.514	-3.52	1.72	-0.16	-2.04	0.043**
Economic resource															
– **Asset index**	-2.40	0.72	-0.27	-3.31	0.001***	-1.84	1.21	-0.12	-1.52	0.131	-1.24	1.22	-0.09	-1.02	0.310
– **Source of income**															
o Salary (reference category)															
o Casual labour	-1.97	2.31	-0.10	-0.85	0.396	9.16	2.57	0.40	3.57	0.000****	0.10	2.29	0.00	0.05	0.964
o Small business	-4.57	2.66	-0.18	-1.72	0.088*	-0.58	2.89	-0.02	-0.20	0.840	-2.42	3.46	-0.06	-0.70	0.486
o Pensions and remittances	-1.83	2.95	-0.06	-0.62	0.536	2.35	3.87	0.06	0.61	0.545	2.05	2.31	0.09	0.88	0.378
o Other miscellaneous income sources *(this includes rent income, begging, prostitution)*	1.28	3.15	0.04	0.41	0.685	-1.44	4.44	-0.03	-0.32	0.747	9.44	4.18	0.18	2.26	0.025**
Urban-rural linkage	-0.90	0.40	-0.17	-2.26	0.026**	-1.50	0.69	-0.15	-2.18	0.030**	0.25	0.55	0.04	0.45	0.655
Social protection															
– **Access to UPSNP**	7.24	2.52	0.19	2.87	0.005***	11.16	7.69	0.11	1.45	0.149	3.11	1.69	0.15	1.84	0.068*
– **Access to loan from a microfinance institution**	-5.62	3.98	-0.09	-1.41	0.161	-4.62	1.76	-0.19	-2.62	0.010**	-0.55	2.51	-0.02	-0.22	0.829
	R^2=.365 $R^2_{adjusted}$=.311 No. Observations = 166 F (13, 152) = 6.725, p < .001					R^2=.313 $R^2_{adjusted}$=.255 No. Observations = 168 F (13, 154) = 5.391, p < .001					R^2=.166 $R^2_{adjusted}$=.095 No. Observations = 166 F (13, 152) = 2.336, p < .01				

Note. N = 500; * p<.1, ** p<.05, *** p<.01, **** p<.001

Table 58: Unique contribution of IVs to the total degree of determination (R^2)

Predictors	Part correlation squared (Unique contribution of the IVs to the R^2)			
	Sheki (small-sized town)	Hawassa (medium-sized town)	Addis Ababa (big city)	Global model
Household structure and composition				
• Age	0.000	0.000	0.004	0.001
• Gender	0.003	0.004	0.016*	0.020****
• Education	0.023**	0.000	0.008	0.012***
• Ratio of children aged below 14 years of age in the household	0.100****	0.019**	0.007	0.020****
• Household structure	0.001	0.002	0.023**	0.002
Total	**12.7%**	**2.5%**	**5.8%**	**5.5%**
Economic resource				
• Asset index score	0.046***	0.010	0.006	0.058****
• Source of income				
o Casual labour	0.003	0.057****	0.000	0.027****
o Small business	0.012*	0.000	0.003	0.003
o Pensions and remittances	0.002	0.002	0.004	0.005*
o Other miscellaneous income sources *(this includes rent income, begging, prostitution)*	0.001	0.000	0.028**	0.010**
Total	**6.4%**	**6.9%**	**4.1%**	**10.3%**
Urban rural linkage	0.021**	0.021**	0.001	0.001
Total	**2.1%**	**2.1%**	**0.1%**	**0.1%**
Social protection				
• Access to UPSNP	0.035***	0.009**	0.018*	0.017***
• Access to loan from a microfinance institution	0.008	0.031	0.000	0.007**
Total	**4.3%**	**4.0%**	**1.8%**	**2.4%**
Total variance in the DV uniquely explained by the IVs	25.5%	15.6%	11.8%	18.2%
The combined contribution of the IVs to the variance in DV	11.0%	15.7%	4.8%	4.1%
Total (R^2)	**36.5%**	**31.3%**	**16.6%**	**22.3%**

Note. * p<.1, ** p<.05, *** p<.01, **** p<.001

5.4.2.2 Regression Coefficients

The principal focus of the regression analysis is to investigate the relative importance of the IVs in predicting the DV. The standardized coefficients (β) output is interpreted by looking at the direction of the effect and its relative strength. From among the 13 IVs used for the construction of the model nine of the IVs in the global model, six in the small-sized town model, four in the medium-sized town model and four in the big city model were significant ($p < .1$). In this

research p<.05 are considered as significant and IVs with p<.1 are also interpreted as marginally significant considering the nature of the research as suggested by some scholars (Gigerenzer et al. 2004; Krueger 2001; Lambdin 2012). Figure 17 presents the contribution of each group of the IVs to the variability in DV across the urban hierarchies.

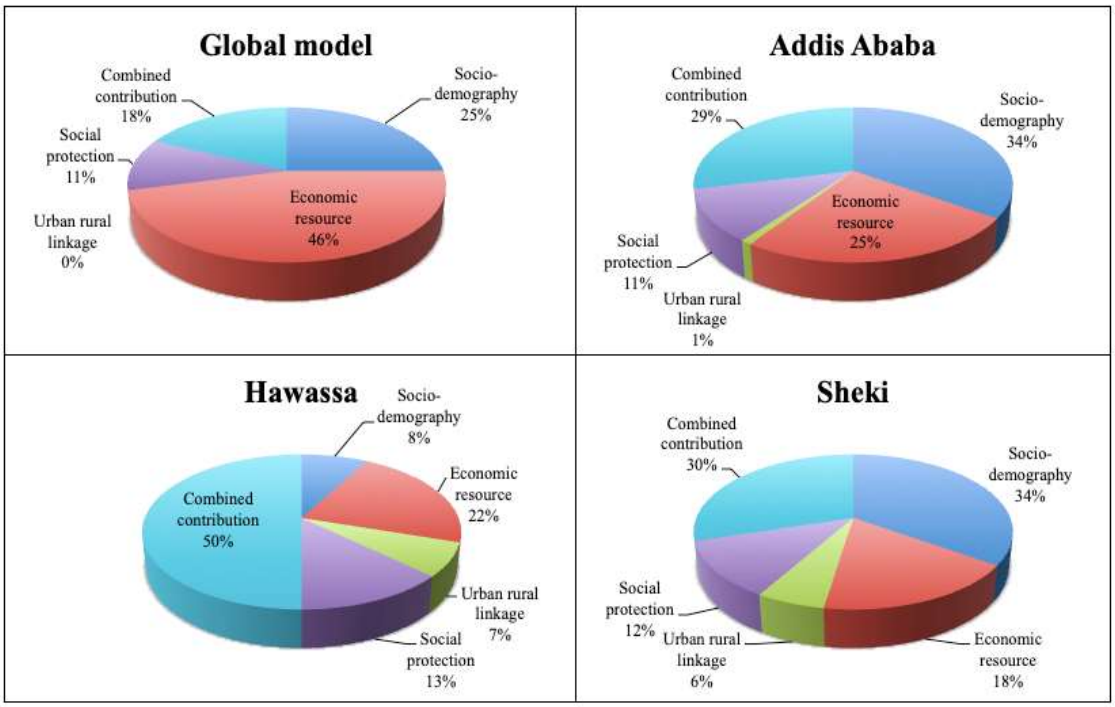


Figure 17: Contribution of the IVs to the variability in the DV

According to the result in the global model, it was revealed that economic resource, household structure and composition, and social protection contributed 82% of the contribution to the prediction of the DV and the remaining 18% was a combined contribution of the IVs. The contribution of urban-rural linkages to the prediction of coping in the global model was unnoticeable.

In the site-specific models, however, the variables predicting coping showed significant variation. For instance, in the medium-sized town (Hawassa), the IVs independently explained only half of the variability while the combined effect of the IVs explained half of it. The other

significant difference was witnessed in the contribution of the urban-rural linkages to predict variability in coping with food access insecurity. The contribution of urban-rural linkages decreases with an increase in the size of an urban area. Following here, the result of each IV with a significant (or marginally significant) contribution in explaining the variability in the DV is separately presented.

A. Household structure and composition

Gender and educational level of the head of the household, percentage of children under 14 years of age in the household, and household structure (nuclear versus extended) were significant predictors of coping with food access insecurity in one or more of the models. Age of the head of the household was not statistically significant in all the models. As shown in Figure 17 household structure and composition variables altogether uniquely contributed 25%, 34%, 8%, and 34% to the R^2 in the global model and models for the big city, medium-sized town and small-sized town respectively.

- ***Gender of the head of the household (female/male)*** was a statistically significant contributor of the variation in the DV in the global model, ($\beta = .16$, $p < .001$); and it was only marginally significant at ($\beta = .16$, $p < .1$) in the model for Addis Ababa. Gender was not a statistically significant predictor of coping in the other models (models for the medium and the small-sized town). The result implies that male-headed households encounter a higher level of stress to cope with food access insecurity as compared with female-headed households.

- ***Education of the head of the household*** was a statistically significant predictor of coping with food access insecurity in the global model ($\beta = -.19$, $p < .05$) and the model for the small-sized town ($\beta = -.13$, $p < .05$). Education was not a significant predictor of coping

with food access insecurity in the two other models (models for the medium-sized town and big city). The negative sign of the coefficient indicates an inverse relationship between the educational attainment of the head of the household and the level of the stress the household encountered to cope with food access insecurity.

- ***Ratio of children aged below 14 years of age in the household*** was a statistically significant predictor of coping with food access insecurity in the global model, ($\beta = .16$, $p < .001$); and in models for small-sized town ($\beta = .40$, $p < .001$) and medium-sized town ($\beta = .16$, $p < .05$). The percentage of the child population in the household was not a significant predictor of coping with food access insecurity in the big city. The result indicated that a higher number of young children per household predict a higher level of stress to cope with food access insecurity.

- ***Household structure (nuclear/extended)*** was a significant predictor of coping with household food access insecurity in the big city ($\beta = .16$, $p < .05$). This variable was not statistically significant for the other models (global, medium and small-sized towns). Statistical significance of this coefficient for the model in Addis Ababa indicates an important role of the extended household structure in reducing the household stress to cope with food access insecurity in the big city.

B. Household economic resources

Asset index and source of income were two of the variables included for the regression analysis. Because the list of the household durables (consisting of 31 items) was extensive, the asset index variable was generated using principal component analysis (PCA). The other variable considered in this category was income sources (consisting of salary, daily labour, small business,

remittances, and other income sources). Because an income source was a categorical data, it was dummy coded for the analysis and salary was considered as a reference category. The asset was a significant predictor of coping in the global model and the model for the small-sized town.

All income sources, except small businesses, were significant predictors of coping with food access insecurity as compared with a salary income (the reference category) in the global model. Whereas in the small-sized town, medium-sized town, and big city model only small business, daily labour, and other miscellaneous income sources (such as income from renting, begging, prostitution) respectively were significant predictors of coping with food access insecurity as compared with a salary income (the reference category). As revealed in Figure 17 economic resource uniquely contributed 46 per cent, 25 per cent, 22 per cent, and 18 per cent to the R^2 in the global model and models for the big city, medium-sized town and small-sized town respectively.

- ***Asset index*** was a significant predictor to explain coping with household food access insecurity in the global model, ($\beta = -.27$, $p < .001$) and in the model for the small-sized town ($\beta = -.27$, $p < .001$). The negative β coefficient for all the models suggests that assets, being part of a household's capital, its availability improves coping by reducing stress during periods of hardship in accessing food. The asset was not a significant predictor of the DV in the other regression models of the big city and medium-sized town.

- ***Household income from daily/casual labour*** was a variable significantly explaining coping with food access insecurity in both the global model, ($\beta = .25$, $p < .001$), and the model for the medium-sized town, ($\beta = .40$, $p < .001$) as compared with households earning their income from a regular salary (the reference category). The positive coefficient in both cases

suggests an increased level of stress among households earning income from daily labour to cope with food access insecurity in comparison to those earning income from salary. In comparison to salary, daily labour was not a significant predictor of coping in the small-sized town and big city models.

- ***Income from a small business*** was a marginally significant predictor of coping with food access insecurity only in the model for the small-sized town, (β = -.18, $p < .1$) as compared with households earning their living from a salary (the reference category). In all the rest of the regression models, small business was not a significant predictor of coping with food access insecurity.

- ***Income from pensions and remittances*** was a marginally significant predictor of coping with food access insecurity only in the global model, (β = .10, $p < .1$) as compared with households earning their living from salary (the reference category). In all the site-specific regression models, income from pensions and remittances was not a significant predictor of coping with food access insecurity.

- ***Income from other miscellaneous sources*** (including rental income, begging, prostitution) was also a significant predictor of coping with food access insecurity in both the global model, (β = .12, $p < .05$), and the model for the big city, (β = .18, $p < .05$) as compared with households earning their living from a regular income from salary (the reference category).

C. Urban-rural linkage

The strength of the urban-rural linkages is measured by a set of constructs such as participation in social activities in rural areas (such as weddings, funerals), ownership of property in rural areas and involvement in economic activities, exchange of money and goods with families and

relatives in rural areas, seeking advice from families and relatives, and exchange of visits with families living in rural areas was a significant predictor of coping with food access insecurity in small- and medium-sized towns at (β = - .17, $p < .05$) and (β = - .15, $p < .05$) respectively. The negative β coefficients suggest that the level of urban-rural linkages of households reduces stress to cope with food access insecurity in small- and medium-sized towns. The predictor was not statistically significant for the global and the big city regression models. As shown in Figure 17 the urban-rural linkages uniquely contributed 0 per cent, 1 per cent, 7 per cent, and 6 per cent to the R^2 in the global model and models for the big city, medium-sized town and small-sized town respectively.

D. Social protection programs

The predictors used under this classification include access to UPSNP (that include the participation of households in any of the programs such as the productive safety net, supplementary food for children, food emergency resources, employment promotion, and household asset building) and access to loans/savings from the microfinance institutions. For this study, access to loans/savings from microfinance institutions is categorized as one of the social protection programs as its goal is poverty alleviation through improving household income. Two of the social protection programs (UPSNP and access to loan) uniquely contributed 18%, 29%, 50%, and 30% to the R^2 in the global model and models for the big city, medium-sized town and small-sized town respectively (Figure 17).

- ***Access to productive safety net programs (UPSNP)*** was a significant predictor of coping with food access insecurity in the global model, (β = .15, $p < .001$), the model for small-sized town, (β = .19, $p < .05$), and the model for big city, (β = .15, $p < .1$). The positive β coefficients in all the models suggest that households with access to UPSNP were having a

higher level of stress to cope with food access insecurity compared with those not using UPSNP.

- ***Access to a loan from microfinance institutions*** is negatively associated to coping with food access insecurity as revealed in the global model ($\beta = -.09$, $p < .05$) and in the model for the medium-sized town ($\beta = -.19$, $p < .05$). According to the result, access to financial loan from microfinance institutions was a significant predictor of the level of stress to cope with food access insecurity. The negative β coefficients in all the models suggest that poor households with access to the financial loans were having a lower level of stress to cope with food access insecurity compared with those not having access to financial loans.

5.5 Conclusion

This chapter dealt with the analysis of the household survey data collected from households in urban slum communities at three sites along the continuum of urban hierarchies. The household characteristics discussed were age-sex structure, characteristics of the heads of the studied households (such as age, gender, education, marital status, migration status), household structure (extended versus nuclear), household size, sources of household income, housing conditions, household assets, participation in urban productive safety net programs, access to micro and small enterprises development services, and linkage with rural kin structure.

The sex ratio of the study population was the lowest in the big city, followed by the medium-sized town and small-sized town, respectively. The percentage of young children under the age of 14 years account for more than a quarter of the study population. The highest percentage of young children was found in small-sized town. Concerning the gender of the household heads, half of the surveyed households were female-headed. The percentage of female heads was the

highest in the big city and the lowest in small-sized town. Education, in general, opens employment opportunities and determines the income level. According to the household data in this research, a little more than one-third of heads of households were illiterate, and the illiterate heads of the households were mostly females. The livelihoods of the study households largely depend upon daily labour, small business, and pensions and remittances. Fewer than one in four of the households have formal employment and were earning a regular salary. The urban-rural linkages in this research were measured by five sets of socio-cultural and economic indicators: participation in social activities, ownership of property and involvement in economic activities, exchange of money goods, exchange of visits, and seeking advice from families and relatives. The three most common channels of household's urban-rural linkages were participation in social activities, visiting families and relatives, and seeking advice. The level of urban-rural social linkage varies significantly among the study households. More than a quarter of the households in the big city do not have any with rural kin structure while most of the households in small- and medium-sized towns have linkages with their kin structures in rural areas.

The household data was used to provide a descriptive analysis of the food security situation based on three different indicators: the prevalence of shortage of food during the past 12 months, FCS, and HFIAS. The result showed that three-fourths of the households had a food shortage during the past 12 months. The shortage of food was sustained for about four months per year. Three of the significant factors that contributed to the shortage of food were: a decrease in the income of the household, a high rate of increase in food prices, and sickness of the household member. With regards to the most recent experience of food intake at the household level, measured by the average number of meals the household had the day before the survey showed that well above half of the study households had less than three meals per day. Food security of

the households, as measured by FCS calculated using the frequency of the household's consumption of different food groups during the seven days before the survey showed that three-fourths of the households were in the range of poor and borderline food consumption. The result of the HFIAS also revealed that about two-thirds of the study households were severely food access insecure.

The results of all measures applied for this study revealed a higher level of food access insecurity among the study households. The analysis of the coping strategies households adopted when the level of insecurity pushes them beyond the difficulties faced in regular times was analysed using a reduced coping strategy index (rCSI). The study households along the continuum of urban hierarchies adopted a range of coping strategies during times of food access insecurity. The strategies were primarily related to compromising food consumption. According to the result, relying on less preferred and less expensive foods, limiting portion size at mealtimes, and reducing the number of meals eaten in a day were the three most frequently used strategies adopted by study households to cope with food access insecurity. According to the estimated rCSI, one in ten of the households were classified as having low stress to cope with food access insecurity, one-fifth of the households were classified as having a medium coping, and most of the study households were in distress coping.

The study examined a descriptive analysis of the association between coping and factors such as household structure and composition, household economic resources (including sources of household income, housing ownership, and asset ownership), urban-rural social linkage, productive safety net programs, and micro and small business development support services with the application of chi-square tests. The association between age, gender, education level of the household head, household structure (Nuclear versus Extended), sources of household income,

asset ownership, urban-rural linkage, and participation in micro and small business development programmes with coping with food access insecurity was statistically significant. Whereas, the association between access to UPSNP and coping with food access insecurity was not statistically significant.

Four separate standard regression analysis models were constructed to investigate the factors predicting coping with food access insecurity. These were a global model (for the total sample) and three models corresponding to each of the study sites along the urban hierarchy - big city (Addis Ababa), medium-sized town (Hawassa), and small-sized town (Sheki). The dependent variable of this study was the level of the stress on households in coping with food access insecurity. The independent variables (factors) in the regression model were selected based on the conceptual framework of the study and considering the significance of the relationship between Coping with food access insecurity and each factor as discussed in the bivariate analysis. The factors included for the analysis were: age, gender, education, the ratio of children aged below 14 years of age in the household, household structure, asset index score, income sources, urban-rural social linkage, access to UPSNP, and access to loans from a microfinance institution.

All the models significantly explained the variance in the dependent variables. The result revealed that the factors explained that 22 per cent of the variance in coping with food access insecurity in the global model. The variance in the dependent variable that came from the factors in the site-specific models, however, showed a considerable difference. The factors explained 37 per cent of the variance in the small town; 31 per cent in medium-sized town; and 17 per cent in the big city. The result indicated that the factors were stronger in explaining the variability in coping with food access insecurity in small- and medium-sized towns than the big city.

According to the result of the regression analysis, it was revealed that gender of the head of the household, education of the head of the household, the ratio of children aged below 14 years of age in the household, household structure (nuclear/extended), asset ownership, urban-rural social linkage, access to social protection programs such as productive safety net programs (UPSNP) and access to loan from microfinance institutions with varying degree of significance across households in the continuum of the urban hierarchies.

The next chapter, Chapter Six, entails the synthesis of findings from the descriptive analysis of the secondary data (Chapter Four), findings from the fieldwork as envisaged by the regression models in this chapter, supplemented by a discussion of findings of the qualitative data from the FGDs.

CHAPTER SIX

SYNTHESIS: SECONDARY DATA, FIELDWORK AND FINDINGS

6.0 Introduction

The main aim of the study was to investigate the association between social, economic and demographic factors with coping with food access insecurity among households in slum urban areas of Ethiopia. This chapter entails the synthesis of how results obtained from the descriptive analysis of the secondary data (Chapter Four) and fieldwork (Chapter Five) relate to the theoretical underpinnings and empirical findings in the extant literature. Accordingly, Section 6.1 of this chapter presents the food security situation of households in Ethiopia based on the descriptive analysis of the secondary data from HCES and WMS of 2004/5, 2010/11, and 2015/6 conducted by Central Statistical Agency of the Government of Ethiopia (Chapter Four). Section 6.2 deals with a discussion of the relationship between household structure and composition and coping with food access insecurity. Section 6.3 provides a discussion of the relationship between household economic resources and coping with food access insecurity. Section 6.4 presents a discussion of the relationship between social protection programs and coping with food access insecurity. Finally, section 6.5 puts forward the discussion of the relationship between urban-rural social linkage and coping with food access insecurity. Thus this chapter discusses the results in light of the relevant literature to make conclusions and recommendations.

6.1 The State of Food Security in Ethiopia across Time and Urban Hierarchies

The descriptive analysis of the secondary data from HCES and WMS of 2004/5, 2010/11, and 2015/6 in Chapter Four provides an overall picture of the state of food security in Ethiopia across time and urban hierarchies framed by the analysis of basic nutritional capabilities and how it

changed with time and across urban hierarchies. This section encapsulates the results of the different measures of food insecurity to make a more comprehensive discussion along with particular characteristics of households. These characteristics (factors) include the gender of the head of the household, household size, household structure (nuclear versus extended), place of residence (big cities, medium-sized towns, small-sized towns, and rural areas), source of household income (wage and salaries, household business, agriculture, remittances, social security, rental income, and other miscellaneous income), expenditure quintile, and participation of households in social protection programs and business development services.

Average calorie intake per person per day has shown significant improvement during the past decade - 2219 kilocalories in 2004/5, 2637 kilocalories in 2010/11, and 2724kilocalories in 2015/16. However, calorie intake varies across the continuum of urban hierarchies and time. Calorie intake per person per day is the lowest in big cities compared to small and medium-sized towns and rural areas, as witnessed in both the 2010/11 and 2015/16 national surveys.

According to the descriptive study result, the gender of the head of the household has a profound relationship with food insecurity status of households. Two of the experiential measures of food security (FCS and rCSI), and a combination of them (CEMFS) consistently reveal the vulnerability of female-headed households to food security. Regardless of the place of residence and household expenditure quintile, households with extended family structure have high FCS score implying a higher balance in their nutrition than households with a nuclear family structure. Similarly, the rCSI score across all expenditure quintiles and households with all sources of income (except for remittances) revealed distress coping among female-headed households and those with a nuclear family structure.

Additionally, calorie intake among female-headed households is consistently high in rural areas and across all hierarchies of urban categories. According to the findings, female-headed households pass through a higher degree of a stressful situation to provide food to their members, and the food eaten in female-headed households lacks nutritional balance, while the quantity remains higher as compared to male-headed households. Higher calorie intake in female-headed households might suggest a higher level of the responsibility of female-headed households to feed their household as compared with their male counterparts. Other studies have also revealed the positive effect of female heads on the welfare of the household (Felker-Kantor & Wood 2012; Bovine& Gupta 1997).

The result of this study has shown a significant relationship between household food insecurity and place of residence (big cities, medium-sized towns, small-sized towns, and rural areas). Low access to balanced nutrition (low FCS) and high coping stress is revealed in rural areas and across small and medium-sized towns compared to households in big cities. Contrarily, calorie intake is the highest in rural areas, and the amount of calorie intake decreases with an increase in the size of an urban area. Households in rural areas had attained higher calories but not balanced varieties of food. According to the researcher's observation, households in major urban areas depend mainly on food purchase from the local market, and these markets get food supplies coming from different directions that give easy access to food varieties. However, in most circumstances, poor households in major urban areas are not able to afford to purchase food commodities. The reason that households in rural areas tend to consume limited food items is due to a reason that what they consume mostly is what they get from their produce, which might give higher calorie but not a balanced nutrition (low FCS). The food supply to the small-sized

towns is of a limited variety than the major urban centres. Besides, residents of major urban areas have a higher level of awareness of the benefits of getting a balanced diet than quantity.

Table 59: Household food security measures according to the different measures of food insecurity by household background characteristics

Household characteristics	Food security measures			
	Calorie intake	FCS	CSI	CEMFS
Gender of the head of the household *(Male-headed versus female-headed)*	High-calorie intake among female-headed households across all places of residence	Low FCS among female-headed households across all places of residence and expenditure quintiles	High/distress coping among female-headed households across all expenditure quintiles and all sources of household income	High food insecurity among female-headed households
Household structure *(Nuclear versus extended)*	High-calorie intake among households with nuclear family structure and low-calorie intake among households with extended family structure	High FCS among households with extended family structure across all the places of residence and expenditure quintiles	High/distress coping for households with nuclear family structure across all expenditure quintiles and household income sources (except for remittances)	High food insecurity among households with a nuclear family structure
Place of residence *(Big cities, medium-sized towns, small-sized towns, and rural areas)*	Low-calorie intake in big cities, a decrease in household calorie intake with an increase in the size of an urban area	High FCS among households in big cities and decreases with a decrease in the size of an urban area	Low coping for households in big cities and high for households in small and medium-sized towns	High food insecurity among households in rural areas, and it decreases with increase in the size of an urban area
Source of household income *(Wage and salaries, household business, agriculture, remittances, social security, rental income, and other miscellaneous income)*	Low-calorie intake among households earning income from social security services and rental income	High FCS among households earning income from wage and salary and households running own business	Low coping among households earning income from salary and wage, household business, agriculture, and remittances	Low food insecurity among households earning income from salary and wage and household businesses
Expenditure quintile *(quintile 1, quintile 2, quintile 3, ...*	Low-calorie intake among households in the lower quintiles	High FCS among households in a higher quintile	High/distress coping among households in the lower quintile	High food insecurity among households in the lower quintile
Participation of households in social protection programs	Low calories intake among households participating in social protection programs	No difference in FCS score between households participating in the programs and those not participating	High/distress coping among households participating in social protection programs	High food insecurity among households benefiting from social protection programs
Participation of households in business development services	No difference in calorie intake between households who received the business development service and those not receiving such service	No difference in FCS score between households who received the service and those not receiving	Low coping among households participating in business development services	Low food insecurity among households participating in business development services

Comparing the level of food insecurity across the lines of expenditure quintile, however, households in the lowest quintile in big cities are more prone to all measures of food insecurity compared to their counterparts in small and medium-sized towns and rural areas. Household food security is related to the source of household income (wage and salaries, household business, agriculture, remittances, social security, rental income, and other miscellaneous income). Higher access to diverse food is shown among households earning an income from wage and salary, and among households running their own business.

Similarly, less stress is revealed in coping with food access insecurity among households earning income from salary and wage, household business, agriculture, and remittances. Concerning calorie intake, a low-calorie intake is revealed amongst households earning income from social security services and those relying on rental income. As expected, all measures of food security consistently revealed that households in the lower expenditure quintile are subjected to a higher level of food insecurity. Households in the lower quintile generally have a low-calorie intake, consume less diverse food items, and experience high/distress coping with food insecurity.

As revealed in the result of the 2015/16 HCES national surveys, social protection services were delivered mainly to female-headed households rather than to male-headed households. The finding affirms a positive response to the set objectives and principles of the country's national social protection policy. However, the result of this study about the food insecurity situation of households according to most measures (calorie intake, CSI, and CEMFS) revealed high food insecurity among households participating in social protection programs. With the other measure of dietary diversity, FCS, there appeared no significant difference according to the household's involvement in social protection programs. According to the study, social protection programs

and projects have focused only on emergency relief services than focussing on sustainably changing the livelihood of food-insecure households.

As emphasised in the national social protection policy, household's involvement in the creation of their own business is an important medium to address the livelihood challenges of the unemployed segment of the population. The HCES national survey collected useful data on households who entered a new business, utilised credit facilities or entered membership of micro and small business cooperatives. Concerning the implication of business development services on household food security, the study revealed that there was no significant difference between calorie intake and FCS by households' access to business development services. In contrast, the study result revealed that households who access business development services have low stress in coping with food access insecurity.

6.2 Household Structure and Composition and Coping with Food Access Insecurity

Both the bivariate analysis and the multivariate regression models in Chapter Five identified factors predicting coping with food access insecurity. This section of the discussion advances on the discussion of four of the significant household factors in coping with food access insecurity - household structure (nuclear versus extended), ratio of young children (below 14 years of age) in the household, and the gender and educational level of the head of the household – structured by the theoretical framework of the study.

6.2.1 Household Structure and Coping with Food Access Insecurity

Household structure (nuclear or extended) was a significant predictor of coping with household food access insecurity in the regression model for the big city. However, this factor was not statistically significant for the other models (global, medium- and small-sized towns). Statistical significance of this predictor for the model in the big city indicates a vital role of the extended household structure to compensate for the stress in coping with food access insecurity.

Data from both the national survey of the 2015/16 as well as the primary household survey of this research similarly revealed that about one-third of the households in urban areas had an extended household structure. The percentage of households characterised by an extended household structure, as well as the average number of extended family members per household in extended households, also increased with an increase in the level of urbanisation. The prevalence of extended household structure being much higher in larger urban settlements than the less urbanised sites may suggest a reason for the relationship not being significant for small and medium-sized towns. The other insight concerning this was that the percentage of households with extended family members was significantly higher among female-headed households. The more likely reason for this could be that they tend to share their dwelling to compensate for lack of income resources. For example, a female household head had illustrated this during an FGD session in Hawassa town:

> *When you have additional family members, like relatives, they often come by themselves, but the people that come are strictly told that they cannot slouch or just sleep, so they are forced to get a job, and they do not have the luxury to nit-pick jobs, whatever it pays they have to work if they are to live with us* (March 17, 2019).

The finding of this study is supported by a recent study by Gabrielli et al. (2018) witnessing that living arrangements in SSA follow original paths that are different for different ethnic and social groups than the dominant sociological theories, which characterises urban households as nuclear families with weak kinship ties (Liang 2008; Puschmann & Solli 2014). As it is widely observed, college graduates and young workers routinely migrate from every corner of the country to the major urban sites like Addis Ababa and Hawassa to meet the labour demand mainly in the construction and service sector. The influx of these migrants led major urban sites to suffer from an overall deficit in housing stock that the migrant workers tend to share housing with relatives in the informal settlements and slum areas of major urban centres. In this regard, Tacoli (2012) provided a similar discussion that lack of access to adequate shelter is a common problem for the poor leading to extended household structure. The works of other researchers (Kumar 2010; Rakodi 2010) have also shown that the pattern is typical across the developing countries in Africa, Asia and Latin America. As understood from the study findings and literature that the prevalence of extended family structure in the big city is not only served cultural and social goals of individuals and households but to serve as a compensatory strategy for supplementing the income of the low earnings slum households, and provides housing to the migrant worker. The addition of an extended family member is consistent with the notion that households call for adjustments when it struggles to maintain the household functioning through the application of adaptation (coping) efforts as illustrated by the Double ABCX model of family stress and adaptation.

6.2.2 Ratio of Young Children in the Household and Coping with Food Access Insecurity

The initial plan of the regression analysis was the inclusion of household size in the regression model as the relationship between poverty and food insecurity with household size had been

shown by several prior studies (Anyanwu 2014; Mutisya et al. 2016; Mohamed 2017; Negash et al. 2015; Motbainor et al. 2016; Welderufael 2014; Sisay&Edriss 2012; Gebre 2012). As suggested by Gershuny and Sullivan (2014), the ratio of young children (under 14 years of age) is used in this study instead of household size. As a result, the unique contribution of the predictor and the strength of the model are slightly improved. The apparent reason was that not the household size, but the number of non-working young dependents of the household that makes more sense in explaining household vulnerability to food insecurity.

The ratio of young children (below 14 years) in the household was the statistically significant predictor of coping with food access insecurity in the regression analysis as revealed in the global model and models for small and medium-sized towns indicating that the higher ratio of young children in a given household predicts a higher level of stress to cope with food access insecurity.

Household's illustration of their situation in the FGD sessions revealed the magnitude of stress low-income family's shoulder when they are unable to provide food to their young children.

> *There were times that I failed to feed my children. I have four children; two of them are a bit older, so they understand my situation while the younger ones are not. When I am in such a condition, the older ones wake up in the morning, do the regular prayer, drink a glass of water and go to school. The younger ones cry for breakfast if I do not have any, I send them to neighbours so they can be fed and nursed. The other time, when my situation is better, I also do the same for others. That is how we cope with our situation* (March 17, 2019).
>
> *FGD participant in Hawassa*

> *After my mother died, I fell on tough times, I had to endure lots of things, and I even stopped sending my children to school because I could not afford it*

> *anymore. At times I even had packed them empty lunch boxes because I did not want them to feel bad seeing that everyone else had their lunch packed for them* (March 24, 2019).
>
> *FGD participant in Addis Ababa*

Despite being a significant predictor of coping with food access insecurity in all models (except the model for the big city), the ratio of minors in the household appeared to be the most significant predictor of coping with food access insecurity in the model for the small-sized town. For instance, replacing the household size by the ratio of young children has increased the prediction power of the model for the small-sized town. Nonetheless, the ratio of young children in the household was not a significant predictor in the model for a big city. One possible reason for this could be that Addis Ababa has the lowest total fertility rate (1.8 children per woman) as compared with Oromiya and SNNPR with 5.4 and 4.4 children per women respectively as revealed in the Ethiopian Demographic and Health Survey (2016). The result here indicates the relationship between a higher fertility rate and the level of stress in coping with food access insecurity. The significance of this variable in the model for the small-sized town justifies the significance of the relationship between coping with food access insecurity and the ratio of young children in a household in less urbanised areas.

The study results offer beyond the simplistic views of a causal relationship between contraceptive use and realised family size. What matters is not only the availability and accessibility of different kinds of resources but also from the capability and willingness to use them makes the difference. Contraceptive knowledge among women in major urban areas opens up the opportunity to control realised fertility and those persons who adopt modern contraception could plan their family size effectively, hence reduce stress in coping with food access insecurity.

6.2.3 The Gender of the Head of the Household and Coping with Food Access Insecurity

The gender of the head of the household is a considerable aspect of the variables in the household structure and composition, motivating food security research. The significance of which arises from the understanding of the traditionally typical role of household heads. As revealed in the results of the regression models gender of the head of the household was statistically a significant contributor to the variation in coping as witnessed in the global model. Gender of the head was only marginally significant in the model for the big city. In the models for the medium- and small-sized town, education level of the head of the household was not a statistically significant predictor of coping. The result not being consistent among the study sites could be partly attributed to the difference in the proportion of female heads across sites. Although gender was equally represented in the total sample, there was a difference among the three sites - in the big city, nearly three-fourths of the households were female-headed while the percentage of female-headed households in the small and the medium-sized town was 39% and 41% respectively.

The result in the regression analysis revealed that female-headed households face lesser stress to cope with food access insecurity than male-headed households do. Likewise, the descriptive result of the secondary data (Chapter Four) has shown that the average calorie intake per person per day was consistently higher among female-headed households across the urban hierarchies (big cities, medium- and small-sized towns, and in rural areas). However, the result seems to have some contradicting feature, as the female-headed households' food expenditure across the urban hierarchies was consistently lower than the corresponding figure for male-headed households. One possible reason for this could be that male heads spend more on food consumption outside of the household's cooking arrangement. The finding in this study does not

validate higher income among female-headed households; it rather implies female-headed households' efficiency in the utilisation of the realised resource. Thus, the finding implies that resources under the control of female heads are more likely to be allocated to promote family welfare as compared to expenditure under the control of male heads. Studies conducted in other countries (Felker-Kantor & Wood 2012; Bovine& Gupta 1997) have also revealed a similar result that compared to men women's spending patterns have a positive effect on the welfare of the household.

The result of this research challenges the definitive conclusion that emerged from several studies contesting the categorisation that households headed by women are at a disadvantage in all the dimensions of vulnerability in comparison to households headed by men. A recent study by Shimeles and Nabassaga (2017) on the cause of inequality that emerged within African countries as inequality of opportunities could be an example. Calorie intake among female-headed households in Ethiopia is higher than their male counterparts despite female-headed households income and expenditure is generally lower than the male heads. The result here may suggest that, if women are supported, it would likely contribute to improve the food security situation of households and reduce the stress upon them to cope with food access insecurity. At a policy and strategy level, the finding justifies the rationale for the endorsed recommendations of the 39th Session of the Committee on World Food Security (2012) urging member states to design and put in place or strengthen comprehensive social protection systems for food security and nutrition. The recommendation aspires to ensure that social protection systems embrace a strategy to maximise the impact on resilience and food security in the context of gender empowerment.

6.2.4 Educational Status of the Head of the Household and Coping with Food Access Insecurity

Education of the head of the household was a statistically significant predictor of coping with food access insecurity in the regression analysis as shown in the global model and in the model for small-sized town showing a positive effect of education on coping with food access insecurity. However, education was not a significant predictor of coping in the two other models (models for the medium-sized town and big city). In major urban areas, where residents have access to information from different sources, formal education may not be the only factor that makes an individual difference, as access to information is much better and even the illiterate are aware of the available livelihood opportunities. However, in small-sized towns and rural areas, only individuals with a higher level of education are better informed about the livelihood options when compared to those with a lower level of education. In larger urban areas where the livelihood determinants are complex, factors other than the education of the head of the household might have the dominance or some other mediating factors, which is not dealt with in the regression analysis in this research, might have played a role.

The positive effect of education on the capability of choosing better livelihoods and improving the income of a household and poverty reduction has universal acceptance. The inception of the capabilities approach focuses on what people can do and to be, which puts ground to address women's suffering from inequalities in resources and opportunities such as educational deprivations (Nussbaum 2009). It is sensible that urban households do have a better awareness of the benefits of education in alleviating poverty. The study result, in this regard, is consistent with human capital theory (Becker 2009) stipulating the positive effect of education on economic outcomes enhancing productivity and income level. The finding is also consistent with empirical

studies where the educational status of the head of the household is a significant factor affecting food security outcome of households in the developing countries of Africa and Asia (Castañeda et al. 2018; Niankara 2018; Tabrizi et al. 2018; Anyanwu 2014; Maitra & Rao 2015; Mutisya et al. 2016).

Moreover, in Ethiopia, studies in both urban (Sisay&Edriss 2012; Gebre 2012; Birhane et al. 2014) and rural areas (Motbainor et al. 2016; Negash et al. 2015) revealed a similar result. The findings in the current study validate these prior scholarly studies emphasising education as a sustainable strategy for fighting against urban food insecurity. The effect of education can be generally categorised in two dimensions - the supply and demand side of food security. The effect on the supply side (though it is not within the scope of this study) education is related to increased productivity while on the demand side it increases the income level and the purchasing power of educated heads of households, hence reducing the stress in coping with food access insecurity.

6.3 Economic Resources and Coping with Food Access Insecurity

Asset ownership and source of household income were two of the economic resource variables included in the regression analysis. The asset index variable was generated by using principal component analysis (PCA). The income source was a categorical variable that was dummy coded and entered the regression analysis while salary was considered as a reference category. In the global model asset, daily labour, and other miscellaneous income sources (such as rent income, begging, prostitution, and the likes) were significant predictors of coping with food access insecurity. The impact of economic resource on coping with food access insecurity varies across the urban hierarchies. According to the regression result assets, casual labour, and miscellaneous

income source were the only significant variables in the model for the small-sized town, medium-sized town, and big city respectively. In the model for the big city income from pensions and remittances was also marginally significant in predicting the coping behaviour of households.

6.3.1 Asset and Coping with Food Access Insecurity

The finding of this study based on the global model and the model for the small town showed that the asset index was a significant predictor of coping with food access insecurity. The result implies that assets can improve coping by reducing stress on poor households during periods of adversity in accessing food. In the other regression models (the medium-sized town and big city model) assets were not a significant predictor of coping. However, the negative sign of the coefficient of the asset in all the models indicates an inverse relationship between assets and coping with food access insecurity as it is intuitively expected. The household asset is a proxy indicator of relative wealth; it represents the spending power of the household (Córdova 2009). Besides, asset implies that households can sell it for cash (for instance, valuables) and generate income during difficult times to buy food and other basic needs (Negash et al. 2015). The finding of this study, in this regard, conforms to several studies in Ethiopia and elsewhere (Sisay & Edriss 2012; Gebre 2012; Alem & Söderbom, 2010; Santos et al. 2011) which all supported that access to asset enhances income and well-being of households and hence improve household's capability to cope with food access insecurity.

6.3.2 Income Sources and Coping with Food Access Insecurity

The study result revealed a significantly higher level of stress in coping with food access insecurity among households earning their livelihood from casual labour and other miscellaneous

sources (such as rent income, begging, prostitution). Households earning their living from remittances and pensions also have a marginally higher level of stress to cope with food access insecurity. In the site-specific models, households with a livelihood source from casual labour in the medium-sized town and those reliant on other miscellaneous income sources in the big city encounter with a significantly higher level of distress coping as compared with the households earning a regular salary.

As urban centres are characterised by cash-based economies and households acquire most of their essential needs (including food commodities) through the market, access to income is an essential element of the capability to ascertain food security of the urban poor. With this, the current study has revealed that most of the households in Hawassa town rely on casual labour or temporary jobs. The severity of the coping behaviour of households in casual labour significantly varies when compared with those earning a salary income from regular employment. Whereas, the burden to cope with food access insecurity among households earning their living from the other income sources (small business, remittances, pension) compared with the salaried ones was not significant. The reason could be that the temporary jobs yield very low and irregular income, yet most of these households pay a significant share of their income for house rent constraining their capability to feed their families. A woman whose livelihood was based on casual work in Hawassa town demonstrated the situation of her household during the FGD session:

> *When it comes to housing, we live in a house not fit for pets, and we still pay 1600 Birr per month. Do our children get any better nutrition? No, they do not because an egg now costs 5 Birr, and those who can afford that are the relatively wealthy families. Not even potatoes are affordable; they are like 10 Birr per kilo. There are times that no matter how much I work, I cannot earn that much even after a full day's work. Fortunately, we do have a tradition of*

> *supporting each other when the times call for it. For example, if I make 10 Birr, I will split that 10 Birr with a colleague that did not make money, just so her child will not go to bed with an empty stomach. Through time my children have adjusted themselves to my routine, they make things easier for me, in that they come from school and if there is anything to eat, wash their hands and get to it, and if not, then they wait for dinner* (March 17, 2019).

Another woman in that same FGD session described a similar situation:

> *Things have been hard since the main expense is the house rent that I am paying 1500 a month. My children do not get to eat something nutritious. They complain every time a fasting season ends craving meat and egg, and I proceed to tell them that fasting is for the rich people. There are also days we go to sleep on an empty stomach, and holidays are no exception; when going to our beds with an empty stomach, all we are comforted by are our prayers* (March 17, 2019).

As described by the woman, the stress in coping with food access insecurity is enormous in situations where there are minors in the household, and the household lives in a rented house.

In the capital city of Addis Ababa, it was found that households earning their living from miscellaneous income (such as rent income, begging and prostitution) were the ones under stress to cope with food access insecurity in comparison to those earning a salary income. Whereas, the magnitude of stress in coping with food access insecurity among households with income from small business, remittances and pension were not significantly different from those earning regular salary income. The factors that pushed some girls into prostitution have been a concern that the FGD participants in Addis Ababa have deliberated. The result of the study showed that households whose earnings are based on such activities are the ones suffering more to cope with food access insecurity. As mentioned by one of the woman discussants in Addis Ababa:

> *Some mothers just strive to educate their daughters, no matter what it takes. Some of the girls that are old enough got employed as waiters and housemaids. Some of the girls quit school and get into prostitution to make money, but they are harming themselves, yet what people perceive is the facade of comfort on their faces* (March 24, 2019).

In the model for a small-sized town, there was no difference in the level of stress in coping with food access insecurity across income sources, except that it was marginally different for households running a small business for their living as compared with those getting a regular salary. Several previous studies on household food security have revealed diversification of income sources (Motbainor et al. 2016; Metasebiya 2009; Teso 2015) and significance of permanent employment against casual work is a significant predictor of food insecurity and a commonly used means of coping with food access insecurity (Tabrizi et al. 2018; Welderufael 2014; Tantu et al. 2015; Birhane et al. 2014; Alem & Söderbom 2011; Amendah et al. 2014; Mohamed 2017; Tolosa 2010). On the other hand, the national employment survey of Ethiopia revealed the highest unemployment rate in major urban centres such as Addis Ababa and Dire Dawa compared with the other major towns, which could be one major factor in the severity of urban food security and the point of focus in alleviating the food security problem. Thus, the result of this study justifies the logical argument in the recently launched government programme with the assistance of the World Bank on urban food security and employment creation focusing major urban areas as a priority.

6.4 Social Protection Programs and Coping with Food Access Insecurity

The Horn of Africa in general and Ethiopia, in particular, continues to be a part of the world that suffers from food insecurity as a result of drought and conflict. Recorded evidence shows that

famine in Ethiopia has a long history going back to the early 16th century. Organised social protection systems have been established during the early '70s to support victims of the famine that killed within the range of hundred thousand in northern Ethiopia mainly Wollo and partly Tigray regions. Ethiopia has been listed at the top of the recipient of food aid since then to respond to the recurring food insecurity affecting millions of its people. Having been cognizant of this the Federal Constitution, as well as the National Social Protection Policy of Ethiopia, has entrusted food security as a priority and prime responsibility of the government along with other social objectives such as health, education, and social security.

The National Social Protection Policy comprises promotion of five focus areas: productive safety nets; employment opportunities and improves livelihoods; social insurance; increase access to social services (health, education and other social services); and providing legal protection (to support victims of violence, abuse, and exploitation). The focus of the discussion in this section is on the relationship between coping with food access insecurity and two of the social protection components – urban productive safety net programme and access to loans/savings s as part of livelihood improvement. The discussion in this section is framed by the capability approach that social protection programmes and projects should be evaluated based on how people have basic capabilities that all individuals have good reason to value.

6.4.1 Urban Productive Safety Net Programme and Coping with Food Access Insecurity

The national HCES and WMS have given a clue on the level of the effectiveness of the nationwide social protection program. On the one hand, the result of the 2015/16 HCES and WMS revealed that the percentage of households earning income from the social protection programs/projects (such as safety net, asset building, and food aid) were higher in rural areas as

compared with urban areas. According to the results, social protection service in Ethiopia during the past decades was rural focused. Furthermore, the national survey result has also revealed that social protection services were provided dominantly to female-headed households as compared with households headed by males across all residential areas. The finding, in this regard, indicates a positive response to the objectives and principles of the country's National Social Protection Policy, which affirm a positive response to the set objectives and principles of the country's national social protection policy. On the other hand, the result of the national surveys has shown enduring food insecurity among households participating in social protection programs.

The regression result based on the household survey conducted three years after the launching of the UPSNP has also similarly revealed a significant association between access to UPSNP and coping with food access insecurity. The finding suggests that households with access to UPSNP are not yet been relieved from the stress in coping with food access insecurity. In the site-specific models, households accessing some form of social protection services in the small-sized town in the big city have a significantly higher level of stress to cope with food access insecurity. Having access to UPSNP in medium-sized town was not a significant predictor of the level of stress in coping with food access insecurity.

The UPSNP in Ethiopia aims to reduce social and economic risks, vulnerabilities and deprivations for its people. The overall result of this study, in this regard, shows that UPSNP targeted to the most food-insecure households in urban areas did not improve target household's food security status nor has it reduced the level of stress in coping with food access insecurity. The reasons may be that the support provided is fragmented and offered on an emergency basis, that it may not have the rigour to change the livelihoods of the urban poor to address the food

security situation of households sustainably. As said by a woman participating in the FGD session in Addis Ababa:

> *The safety net programme only provided us with hand to mouth solutions, and the big problem persists. We, as a community, have a strong social bond that is helping us more. If there is no injera (bread) in my home I can share some from my neighbour; and if I am not around, it is not uncommon for the neighbours to feed and care for my children until I come back* (March 24, 2019).

The result of this study is consistent with findings from other studies elsewhere in Africa (Gilligan et al. 2009; Hidrobo et al. 2018; Tiwari et al. 2016) suggesting that only a substantial, consistent, and predictable transfer can increase asset holdings and improve both the quantity and quality of food consumed by beneficiaries and reduce the prevalence of food insecurity. While uneven transfers, falling below programme targets, may not lead to an impact on food expenditures. Not only the scale of the transfer matters, Dercon (2011), for instance, has shown insignificance of social transfers for development and growth is due to its principal motivation being inequity and poverty impacts. Other previous studies (Gentilini 2015; Shimeles & Woldemichael 2013) also emphasised the need to consider the high rate of urbanisation and a rise in prices of food commodities along with other challenges and complexities in urban poverty as it contributes to deterioration in the welfare of households. Implementation of social protection, in this regard, is pertinent to the case of urban Ethiopian as suggested by the analysis of ILO (2014) based on the 2008 economic crisis that only countries with adequate social protection systems were able to respond more quickly and effectively.

Although there is a positive achievement in poverty reduction in rural areas, urban poverty, and the associated food insecurity in urban Ethiopia remains to be a key challenge. The current

UPSNP pilots that began in 2015 focuses on the urban dwellers below the poverty line in major cities such as Addis Ababa and Hawassa among others laid its foot on foreign aid to the limits of the approved grant being neither sufficient nor dependable compared to the magnitude of the insecurity and the increasing nature of the aggravating factors. Ethiopia, one of the developing nations dependent on foreign aid to finance its food security programs, need to implement a sustainable social support system for households in perpetually food-insecure urban areas considering the high rate of urbanisation, the skyrocketing cost of living, and complexities in urban poverty as it contributes to deterioration in the welfare of households.

6.4.2 Access to Microfinance Institutions and Coping with Food Access Insecurity

As supposed in the national social protection policy of Ethiopia, household's involvement in the creation of own business with the financial loan is an important medium to address the livelihood challenges of the unemployed segment of the population. The poverty reduction strategy of Ethiopia (National Planning Commission 2016) has also stipulated a framework for the creation of job opportunity through the promotion of micro and small enterprise, with substantial support to access credit, training, technology, and information. With regards to the implication of households' access to business development services on household food security, the 2015/16 HCES national survey result revealed that there was no significant difference between calorie intake and diversity of food items consumed whether the household received the business development service or not. In contrast, the study result revealed that households participating in business development services have lower stress in coping with food access insecurity. Descriptive analysis of the household survey in this study has also revealed a significant association between coping with food access insecurity and access to financial service from microfinance institutions. However, coping with food access insecurity was not significantly

associated with the participation of households in the traditional saving scheme "Equib" and their access to other support services from a micro and small-scale business office. Inclusion of the access to loan from a micro-financial institution in the regression model analysis along with other predictors revealed a significant negative association between household stress to cope with food access insecurity and access to financial loan from microfinance institutions in both the global model and the model for the medium-sized town. Although the variable was not significant in the other models (big city and small-sized town) the sign of the coefficient in all the models was a negative indicating inverse relationship between coping and access to financial credit services among households in urban Ethiopia.

Copping with food access insecurity is a critical problem that the urban poor have been challenged with throughout the developing nations, more specifically in SSA countries such as Ethiopia. The provision of microfinance loans is one among the different tools (such as food support, monetary transfers, government subsidies) that have been used with the attempt to improve the capacity of poor households in urban areas to access food from the local market. This study, based on the analysis of national survey data and a household survey across urban hierarchies from the three urban slum communities, has shown the significance of extending financial loan services helping poor households to decrease food insecurity and hence to address the stress in coping with food access insecurity. The result of this study is consistent with the findings from the previous studies in Ethiopia (Sisay&Edriss 2012; Gebre 2012; Tolosa 2010; Wassie et al. 2019) and elsewhere (Addae-Korankye 2012; Lawanson & Oduwaye 2014; Masanga et al. 2017; Ngala et al. 2017) that access to credit determines food security status of households and their level of stress to cope with food access insecurity. However, several studies in Ethiopia (Tarekegn & Molla 2018; Tadesse 2014; Tarozzi et al. 2015) are critical of the

effectiveness of microfinance institutions as most of them are out of the reach of the poor segment for the urban poor for the reason that credit is limited to those who own an asset for collaterals, which the urban poor are lacking.

6.5 Urban-Rural linkage and Coping with Food Access Insecurity

The descriptive findings of this study presented in Chapter Five have shown a noticeable pattern of relationship between households' coping with food access insecurity and the strength of urban-rural linkages among poor households in small and medium-sized towns. In comparison, there was no such clear pattern of relationship between coping and urban-rural linkages among the urban poor in the big city. A composite index of urban-rural linkages based on a set of constructs/variables was entered in the regression model to investigate the relationship between urban-rural linkages and coping with food access insecurity. The variables used for the construction of the index of urban-rural linkages were participation in social activities at rural areas, participation in rural economic activities (including ownership of the property), exchange of money and goods, seeking advice from families and relatives, and exchange of visits. Similar to the result of the descriptive analysis, the regression model has also revealed a significant negative relationship between urban-rural linkages and coping with food access insecurity in small- and medium-sized towns. The finding implies that stronger urban-rural linkages reduce the stress upon the urban households in coping with food access insecurity. However, this predictor of coping with food access insecurity was not statistically significant in the model for the big city.

The reason that urban-rural linkages were not a statistically significant predictor of coping in the model for the big city may be due to a weaker linkage between households in the big city with

their kin structure in rural villages. Qualitative data (FGD) has shown how this relationship holds at different levels of urban centres. The storey derived from the FGD discussants revealed the nature of the interaction between the urban poor households with their relatives in rural areas, how much has the linkage been helping them in coping with food access insecurity, and how this interaction fades through time. The interface between urban and rural households is intuitively more persuasive in small and medium-sized towns due to geographic proximity and that rural families visit the nearby towns more frequently both for selling their produce and purchase of consumption items and at times rural residents also go to urban sites to socialise. The following quote from an FGD participant in the small-sized town (Sheki) portrays the nature of the linkage urban households have with their relatives and families in rural areas, and how this relationship withers away through time:

> *Our relatives in rural areas used to pass the night with us during market days and that they also bring us farm products (vegetables, cereal, dairy products). Nowadays they even denied us greetings let alone giving us their hands for support. Because we are getting poorer and they are better off today, they do not come to see us as they regularly did in earlier times* (March 10, 2019).

The urban-rural linkages in Ethiopia at a household level have generally been weaker after the revolution that followed a regime change and nationalised and transferred rural land to state ownership in 1974/75. Review of the current rural land policies revealed a considerable variation in the contents and assumptions of the laws from one regional state to the other with a noticeable difference in its contribution to urban-rural social linkage. For instance, access to rural land in Oromiya and the SNNPR Regional States play a significant role in linking urban households with their rural kin structure as it allows the right holder to transfer his/her rural land use right through inheritance to the heir irrespective of their wealth status, current occupation, or place of

residence. Contrarily, the land laws in Amhara (20017) and Tigray Regional State (1997) allows inheritance and transfer of land rights only if the heir is dependent on the right holder's farm and that he/she is not self-subsistent outside agriculture sector. The land law in the Northern regions of Ethiopia (Amhara and Tigray) seems to have considered land as a welfare tool than a development apparatus. The rural land laws in these regions deny heirs access to rural land if they attain better livelihood (through employment or business) elsewhere.

The rural land, be it productive or not, be it disputed or secured it helps to maintain the urban-rural linkages among the kin structure which in turn can channel socio-economic development to both urban and rural areas. Moreover, it can also help to improve urban households' food access insecurity. The following two quotes from the FGD discussants in Hawassa explain this:

> *When my husband died, I went to the village about five months later, and I found his house destroyed and entirely controlled by his brothers to deny inheritance rights of their nephews and nieces from the land that they are entitled too* (March 17, 2019).

> *My relatives are managing the land I inherited from my parents in the countryside, but it keeps bearing nothing. Every time I go all I find is tall grass and overgrown weeds, that is good only for feeding cattle, and so I am left with nothing to gain from the land. I only hope that someday my son will grow up and make use of the land. So, to realise that hope, I must keep paying the taxes from the limited resources that I have* (March 17, 2019).

Even though a large proportion of urban slum dwellers live in a deplorable condition with difficulties to feed their families, their relatives and families living in the rural village have a general misconception of 'urban dwellers are richer and live a better life'. The following quotes from the FGD sessions illustrate the views of poor households in urban areas in this regard:

> *People from the countryside are like guests, and that fact does not change whether we go to them or they come to us. They always want something from us, no matter how much land they have or how rich they are. People from the village come here to grab used clothes and shoes from us. Nevertheless, they do not even send us vegetables that they can easily grow in their backyards* (March 17, 2019).
>
> *(FGD participant in Hawassa)*

> *In the village, they have everything they want right in their backyard, but when they come to visit us, it is a struggle to cater to them. We experience difficulties in servicing their stay at our homes. We even borrow money to fund their way back because they come to us penniless* (March 24, 2019).
>
> *(FGD participant in Addis Ababa)*

The qualitative study has shown that the urban-rural linkages fade away after the first generation of migrants passes away. The following quote in Addis Ababa reveals such an experience:

> *My mother was born and raised in Addis Ababa, but my father was from the countryside. After he passed away, his relatives forgot about us altogether; they do not even send their regards* (March 24, 2019).

Households in developing countries use a variety of informal mechanisms to cope with the livelihood crisis, including mutual support and risk sharing, although these mechanisms themselves are vulnerable to shocks. The informal support system within the neighbourhood of slum communities was much more meaningful than what they can expect from a rural kin structure in coping with food access insecurity. However, in big cities slum neighbourhoods, the informal support structure is not common to all. There also exist some degree of privacy and anonymity as it is the nature of life in bigger cities elsewhere. This situation was described by one of the FGD discussants in Addis Ababa:

> *In the past, there was a tradition of giving hand-outs to one another, but nowadays everyone is selfish and individualistic. Not even neighbours visit each other. Things are not as they were during the days of our fathers, because in those times we used to spend much time with our neighbours. However, now a day, we even do the most social act of drinking coffee behind closed doors. The old traditions are all but gone. (FGD participant in Addis Ababa)*

Contrary to the prime focus in the literature on rural-urban linkages in Africa being on urban dwellers contributing to the livelihood of the rural families through remittances, several studies in African countries showed the significance of urban-rural linkages representing vital welfare options and survival of poor urban households (Frayne 2004; Krüger 1998; Lesetedi 2003; O'Connor 1991; Owuor 2007; Tawodzera 2013; Vaitla 2012). In a similar account, a study in Ethiopia (Adugna & Hailemariam 2011) has also shown the significance of urban-rural social linkages to ensure the survival and development of both urban centres and rural livelihoods. The departure point of the result of this study is that the significance of urban-rural linkages does not apply to all urban areas in a nutshell. The magnitude of the urban-rural social linkage, and hence its significance in predicting coping with food access insecurity varies along the continuum of urban hierarchy that it diminishes with an increase in the size of an urban area.

The level of attention given to the informal social protection systems and lack of focus in the development policies (land policy in particular) might have a negative influence in this regard. For instance, the national report on housing and sustainable urban development of Ethiopia (Ministry of Urban Development, Housing, and Construction 2014) sympathetically focused on the analysis of the formal and structural aspects of the urban-rural social linkages such as the input and output marketing facilitates, the involvement of the private sector, the promotion of micro-enterprises, and the development of small-sized towns and rural service centres while the

household level urban-rural linkages were not given due emphasis.

The significance of urban-rural linkages for mutual growth and development of both urban and rural development in Ethiopia is well represented by the social structure of the *Gurage* community. The urban Gurages with rural land have an option to his village in the event of a failure in urban life (Baker 1992). The result of this study, in this regard, yields lesson for transforming policy framework (such as land policy) in urban-rural social linkages. Future policies may also need to consider the importance of strengthening all forms of social networks within the slum neighbourhoods to offer members and especially female-headed householders with a pool of resources for a minimum subsistence. Constructs used in this study to measure urban-rural linkages of households with their kin structure needs to be further validated considering cultural variability to provide a robust prediction to inform policy and practice for improving the effectiveness of the social protection programs in general and to specifically address the food security challenges of the urban poor in Ethiopia.

6.6 Conclusion

This chapter presented the discussion of the study findings per the outlined objectives of the study. The discussion based on the descriptive analysis of the secondary data from HCES and WMS of 2004/5, 2010/11, and 2015/6 provides an overall picture of the state of food security in Ethiopia across time and urban hierarchies. According to the study result, the gender of the head of the household had a profound relationship with food insecurity status of households. All measures of food security consistently revealed the vulnerability of female-headed households to food insecurity.

Regardless of the place of residence and household expenditure quintile, households with

extended family structure had a higher balance in their nutrition than households with nuclear family structure. Similarly, the rCSI revealed distress coping among female-headed households and those with nuclear family structure across all expenditure quintiles and households with all sources of income (except for remittances). The result of this study has also shown a significant relationship between household food insecurity and place of residence. Low access to balanced nutrition (low FCS) and high coping stress is revealed in rural areas and across small and medium-sized towns compared to households in big cities. Contrarily, calorie intake is the highest in rural areas, and the amount of calorie intake decreases with an increase in the size of an urban area. Similarly, less stress is revealed in coping with food access insecurity among households earning income from salary and wage, household business, agriculture, and remittances.

Data from both the national survey of the 2015/16 as well as the primary household survey of this research similarly revealed that about one-third of the households in urban areas had an extended household structure. According to the regression result, household structure (nuclear or extended) was a significant predictor of coping with household food access insecurity for the big city. Statistical significance of this predictor for the model in the big city indicates a positive role of the extended household structure to compensate the stress in coping with food access insecurity.

The ratio of young children (below 14 years of age) in the household was also the statistically significant predictor of coping with food access insecurity in the regression analysis as revealed in the global model and models for small and medium-sized towns indicating that higher ratio of young children in a given household predicts a higher level of stress to cope with food access insecurity.

As revealed in results of the regression model gender of the head of the household was a statistically significant predictor of coping as witnessed in the global model and it was only marginally significant in the model for the big city. Education of the head of the household was a statistically significant predictor of coping with food access insecurity in the regression analysis as shown in the global model and in the model for small-sized town showing a positive effect of education on coping with food access insecurity.

Asset ownership and source of household income were two of the economic resource variables included in the regression analysis. The finding of this study based on the global model and the model for small-sized town showed that the asset index was a significant predictor of coping with food access insecurity. The result implies that assets can improve coping by reducing stress on poor households during periods of adversity in accessing food. The study result revealed a significantly higher level of stress in coping with food access insecurity among households earning their livelihood from casual labour and other miscellaneous sources (such as rent income, begging, prostitution). In a similar account, those earning their living from remittances and pension also have a marginally higher level of stress to cope with food access insecurity. In the site-specific models, households with a livelihood source from casual labour in the medium-sized town and those reliant on other miscellaneous income sources in the big city encounter with a significantly higher level of distress coping as compared with the households earning a regular salary.

The regression result based on the household survey of this study conducted three years after the UPSNP had been launched, has also similarly revealed a significant association between access to UPSNP and coping with food access insecurity suggesting that UPSNP has not yet been able to relieve the stress in coping with food access insecurity. However, as supposed in the national

social protection policy of Ethiopia, the study result revealed that households participating in business development services have lower stress in coping with food access insecurity.

The descriptive findings of this study have shown a noticeable pattern of relationship between households' coping with food access insecurity and the strength of urban-rural linkage. The regression analysis similarly revealed a significant negative relationship between urban-rural linkages and coping with food access insecurity in small and medium-sized towns. The finding implies that stronger urban-rural linkages reduce the stress upon the urban households in coping with food access insecurity.

CHAPTER SEVEN

CONCLUSIONS

7.0 Introduction

In the proceeding chapter, the findings of the study were broadly discussed. Section 7.1 presents a summary of the findings per each of the objectives. Section 7.2 outlines the conclusions of the study based on the findings and the discussions in the previous chapter. Section 7.3 presents recommendations relevant for urban food security policy and programmes as well as implications for future research in the field.

7.1 Summary of the Findings

The main aim of the study was to investigate the relationship between social, economic and demographic factors in coping with food access insecurity among households in urban slum areas of Ethiopia. This section summarises the significant findings of the study as per the specific objectives of the study.

1) The state of food insecurity in Ethiopia across time and urban hierarchies

The food security situation of Ethiopia is analysed based on an in-depth descriptive analysis of the national surveys (HCES and WMS) in 2004/5, 2010/11, and 2015/6 and based on the fieldwork conducted at three urban sites - Sheki, Hawassa, and Addis Ababa representing small, medium, and big city as part of this research. According to the secondary data analysis, average calorie intake per person per day has shown a significant increase in Ethiopia during the past decade: 2219 kilocalories in 2004/5, 2637 kilocalories in 2010/11, and 2724kilocalories in 2015/16. However, calorie intake also varies across the continuum of urban hierarchies. Calorie

intake per person per day was the lowest in big cities compared to small- and medium-sized towns and rural areas as witnessed in both the 2010/11 and 2015/16 national surveys. According to both the 2010/11 and 2015/16 national surveys, households in big cities have the lowest calorie intake per person per day, and that increases along with a decrease in urban size.

Calorie intake is associated with social and demographic factors. According to the result of the national surveys, calorie intake per person per day has a decreasing trend across time among households in the lowest expenditure quintile. In the 2015/16 survey, the average calorie per person per day goes far below the WHO's recommended minimum standard among households in the lowest expenditure, while it was steadily increasing for households in the upper quintile. Regardless of the place of residence, female-headed households consistently have higher average calorie intake per person per day compared to male-headed households. The difference in calorie intake between households headed by male and female was statistically significant.

The results from the analysis of the 2015/16 HCES survey revealed that households participating in social security and food aid programs at both urban and rural areas, in general, have significantly lower calorie intake as compared with non-beneficiary households. Participation in micro and small businesses in urban areas couldn't produce enough evidence to show improvement in calorie intake. Households receiving remittances have the highest calorie intake across all categories of urban hierarchies, followed by households earning their income from wages and salaries compared with households earning income from any other sources.

When it comes to the quality of the food consumed measured by FCS, female-headed households regardless of their place of residence, household structure, expenditure quintile, participation in

micro and small business, and access to social protection programs, have lower FCS as compared to male-headed households.

Concerning coping with food access insecurity, the national survey results revealed that households in big cities adopt strategies such as relying on less preferred and less expensive food, limiting portion size of meals, and reducing the number of meals eaten in a day as compared with households in medium- and small-sized towns and rural areas. Regardless of the type of livelihood pursued by the household and across all the expenditure quintiles, female-headed households and households with nuclear family structure encounter higher stress to cope with food access insecurity (high rCSI),

The result of the fieldwork conducted at three sites Sheki, Hawassa, and Addis Ababa (representing small, medium, and big city) as part of this research has also revealed a result that food security status of the study households resembles the findings in the national surveys. According to the finding of the study, three-fourths of the households had food shortage during the past 12 months (field data was collected in March 2019). The proportion of the households affected by a food shortage varies across the urban hierarchy in that it was highest in the small-sized town as compared with the situation in the medium and big city. Duration of the food shortage was higher in Addis Ababa than in the Hawassa and the small-sized town Sheki. Three of the significant factors that contributed to 80 per cent of the causes for the shortage of food were: decrease in the income of the household, high rate of increase in food price, and sickness of a household member. A rise in food price was the major challenge as reported by households in Addis Ababa.

According to the study, FCS is the highest at Hawassa, followed by the small-sized town Sheki, and the lowest score was computed for Addis Ababa. Higher FCS implies consumption of food items with a higher nutritional value (such as milk, meat, and pulses) for more days within the week.

According to the fieldwork data, nearly three-fourths of the study households were worried that their household would not have enough food. The degree of this anxiety and uncertainty significantly varies across the urban hierarchies, and it was at its worst level among residents of the small-sized town Sheki followed by Hawassa and Addis Ababa. The overall HFIAS score of the study households revealed that food access insecurity was the highest in the small-sized town of Sheki, followed by Hawassa and Addis Ababa.

2) Relationship between household structure and coping with food access insecurity

With the application of a standard regression model, the study investigated the association of between the household structure and composition (such as gender and education of the head of the household, household structure /extended versus nuclear/, and the ratio of young children in the household with coping) with coping with food access insecurity. The result of the regression model revealed that gender and education of the head of the household, the proportion of young children in the household and household structure (extended versus nuclear) are significantly associated with coping. However, the significance of these factors varies across urban hierarchies. Female-headed households in the global model and big city face lesser stress to cope with food access insecurity than male-headed households. Education of the head of the household was a statistically significant predictor of coping with food access insecurity in small-sized town, but it was not a significant factor for the medium-sized town and big city. As is

revealed in the global model and models for small- and medium-sized towns, the ratio of young children in the household was the statistically significant predictor of coping with food access insecurity. The result indicates that a higher ratio of young children to the total household in a given household predicts a higher level of stress to cope with food access insecurity. The study found that household structure was a significant predictor of coping with household food access insecurity in the regression model for the big city but not for medium- and small-sized towns. The percentage of the extended household structure, as well as the average size of extended household members per household, increased with an increase in urban size; and the statistical significance of this predictor in the big city indicates a positive role of the extended household structure for poor households to cope with food access insecurity.

3) Relationship between household economic resources and coping with food access insecurity

Asset ownership and source of household income were two of the economic resource variables included in the regression analysis. The finding of the study based on the global model and the model for small-sized town showed that the asset index was a significant predictor of coping with food access insecurity. The result implies that assets can improve coping with food access insecurity by reducing stress on poor households during the periods of food crisis. In the models for the medium-sized town and big city assets were not a significant predictor of coping.

The study result revealed a significantly higher level of stress in coping with food access insecurity among households earning their livelihood from casual labour and other miscellaneous sources (such as rent income, begging, prostitution, and the likes). Similarly, those earning income from remittances and pensions also have a marginally higher level of stress to cope with

food access insecurity. Looking into the variability across the urban hierarchy, households engaged in casual labour in the medium-sized town, and those reliant on other miscellaneous income sources in the big city encounter with a significantly higher level of distress coping as compared with the households earning a regular salary.

4) Relationship between social protection programs and coping with food access insecurity

The significance of two of the social protection focus areas, the urban productive safety net programme and access to a financial loan as part of livelihood improvement were investigated in this study. The regression result (global model) based on the household survey data, which was conducted three years after the UPSNP had been launched, has revealed a significant association between coping with food access insecurity and access to UPSNP. The finding suggests that UPSNP has not yet been at a level to help households cope with the stress in coping with food access insecurity. The overall result of this study shows that UPSNP in urban areas did not improve target household's food security status. Contrarily, access to loans from a micro-financial institution revealed a significant association with coping in both the global model and the model for the medium-sized town. But it shows no significant association in the big city and small-sized town.

5) Relationship between urban-rural linkage and coping with food access insecurity

A composite index of urban-rural linkages based on a set of constructs was entered in the regression model to investigate the relationship between urban-rural linkages and coping with food access insecurity. The variables used for the construction of the index of urban-rural linkages were participation in social activities at rural areas, participation in rural-based economic activities (including ownership of the property), exchange of money and goods,

seeking advice from families and relatives, and exchange of visits. The regression analysis has revealed a significant negative relationship between urban-rural linkages and coping with food access insecurity in small and medium-sized towns, which implies that stronger urban-rural linkages reduce the stress on urban households in coping with food access insecurity. The urban-rural linkages factor was not a statistically significant predictor of coping in the model for the big city.

7.2 Conclusions

The overall trend in the available research in many of the developing countries, including Ethiopia, mainly concentrates on rural areas viewing food security primarily a rural problem. However, as revealed in studies in the developing world and according to the results of the national surveys (HCES and WMS) in Ethiopia, the urban poor were disproportionately affected by food insecurity, and it continued to be worse with time. Higher urbanisation rates entangled with the growing urban poverty has advanced the issue of urban food security as one of the leading development challenges that call for more comprehensive research to guide policies and programs to address the complexities of the urban food systems. This study investigates how household structure and composition, household economic resources, social protection programs, and urban-rural linkages predict coping with food access insecurity among the urban poor households. From the findings and the discussions in the previous chapter, the following conclusions are drawn:

i) Extended family structure helps to relieve stress in coping with food access insecurity

A rise in the cost of living and housing expenses has a significant impact not only on the livelihoods of the urban poor it also affects their living arrangements. The study has shown a

higher percentage of extended family structure in the major urban areas as compared to medium- and small-sized towns. Consequently, the increase in households with an extended family structure in the major urban areas is within the principles of reciprocity that it fulfils the personal goals of the migrant in accessing residential space. At the same time, also it improves the food security outcome of the hosting household through the financial contribution of the migrant worker. The finding of this study calls for a re-examination of the sociological theories characterising urban households as nuclear families with declining kinship ties.

ii) Households with young children have higher stress to cope with food access insecurity

Most studies consider household size as a factor in food security research, as it is associated with food consumption. However, this study showed that it is not the size of the household per se but the non-working young dependents that increases vulnerability to food insecurity and put households under stress. The finding presupposes a relationship between a higher fertility rate and the level of stress in coping with food access insecurity.

iii) Food access insecurity affects female-headed households

Households headed by women are at a disadvantage in all the dimensions of vulnerability in comparison to households headed by men. The result of this study witnessed average calorie intake per person per day was consistently higher among female-headed households across the urban hierarchies. The finding suggests that female-headed households have higher efficiency in the utilisation of the available resource and that resources under the control of female heads are more likely to be allocated to promote family welfare as compared to expenditure under the control of male heads. However, the analysis based on the national survey data and the primary

field data analysis of this study has shown that female-headed households have lower FCS as compared to male-headed households implying less access to food items with a higher nutritional value (such as milk, meat, and pulses). Besides, both data sources confirm that female-headed households encounter higher stress to cope with food access insecurity.

iv) Educational attainment of the household head matters in coping with food access insecurity

As stipulated in the human capital theory education has a positive effect on economic outcomes enhancing productivity and income level. The current study has intuitively shown that educational attainment of the household head has a positive effect on coping with food access insecurity. It can be concluded that the result in the current study validates prior scholarly studies emphasising education as a sustainable strategy for fighting against urban food insecurity and increases the purchasing power of households to ease the severity of coping with food access insecurity.

v) Asset improves the household capacity to cope with food access insecurity

The household asset ownership is a proxy indicator of relative wealth that it represents the spending power of the household. The study has also revealed that asset is inversely related to coping as it is intuitively expected. It is therefore concluded that access to asset enhances the income of households and hence improve the household's capacity to cope with food access insecurity.

vi) Income sources determine how urban households cope with food access insecurity

As urban centres are characterised by cash-based economies and households acquire most of the essential commodities through the market, access to income is an essential element for food security of the urban poor. The study result revealed a significantly higher level of distress coping among households earning their livelihood from casual labour and other miscellaneous sources as compared with the households earning a regular salary signifying an adverse effect of irregular income on coping with food access insecurity. The result has also shown a variation on the impact of the different categories of income sources to coping across urban hierarchies. It is therefore concluded that the study justifies the logical argument of the recently launched government programme with the assistance of the World Bank on urban food security and employment creation focusing on major urban areas where the unemployment rate is the highest as a priority.

vii) The stress in coping with food access insecurity not adequately addressed with UPSNP

The UPSNP in Ethiopia aims to reduce social and economic risks, vulnerabilities and deprivations for its people. The overall result of this study has shown that UPSNP targeted at the most food-insecure households in major urban areas has neither improved target household's food security status nor has it reduced the level of stress in coping with food access insecurity. UPSNP is only a recent intervention started with grants approved by the World Bank in December 2015, which may constrain to ascertain its impact. However, based on the results, the study concludes the need for implementing the social support system focusing on perpetually food-insecure urban areas with substantial and predictable transfers to impact food security

outcomes via UPSNP. Interventions need to examine and consider complexities in urban poverty along the urban hierarchies as it relates to the welfare of poor households.

viii) Access to loan improves livelihood and improve coping with food access insecurity

The national social protection policy as well as the poverty reduction strategy of Ethiopia encourages the creation of own business through accessing credit, training, technology, and information as an essential medium to address the livelihood challenges of the unemployed segment of the population. The result of the study, in this regard, has shown the significance of extending financial loan services in helping poor households to alleviate the stress in coping with food access insecurity. It is, therefore, concluded that along with UPSNP, facilitating access to a financial loan with a lower interest rate to the urban poor is an indispensable development strategy to address food insecurity sustainably.

ix) Urban-rural linkages help the poor urban households to cope with food access insecurity

The significance of urban-rural linkages characterises a vital welfare option and survival of the poor urban households in many African countries. This study, in this regard, has shown a noticeable pattern of relationship between coping with food access insecurity and the strength of urban-rural linkages among poor households in small- and medium-sized towns. In comparison, there was no such relationship between coping and urban-rural linkages among the poor households in the big city. Instead, the informal social support system within the neighbourhood of slum communities in major urban areas plays a role in helping households cope with food access insecurity than from a rural kin structure. In conclusion, the pattern of the urban-rural

linkages and its significance in predicting coping differs along the continuum of urban hierarchy, and it diminishes with an increase in the size of an urban area.

x) Factors determining food insecurity vary across urban hierarchies

The traditional urban-rural dichotomy may not suffice to portray the full picture of food security situations for policy and programming. The finding of this study has shown that the degree of food insecurity, as well as the mechanisms how food insecure households strive to cope with food access insecurity, varies across the continuum of urban hierarchies.

7.3 Recommendations

7.3.1 Implications for Policy and Practice

This study is based on the analysis of the secondary data from the HCES and WMS national data across time and a household survey from three urban sites representing urban hierarchies of small, medium and big cities. The result has shown the pattern and level of vulnerability of the urban poor households, and the magnitude of the stress upon food insecure households in coping with food access insecurity. The results discussed in the previous chapter have generated a comprehensive understanding to focus on the following implications concerning policy and programs to support, strengthen and protect vulnerable households in crises.

i) Reinforcing urban-rural linkage

The Ethiopian government is focused mainly on the structural aspects of urban-rural linkages such as input and output marketing facilitates, the involvement of the private sector, promotion of micro-enterprises, and development of small-sized towns and rural service centres while the

household level urban-rural linkages were not given due emphasis. The attention given to the informal social protection systems is weak, and operationalisation of the informal social protection mechanisms lacks inclusion into programs and projects. For instance, in a country where more than 80% of the population resides in rural areas, and urbanisation growing at a higher rate, it appears essential to set mechanisms for strengthening the urban-rural linkages not only to address the food security concerns of the urban poor but also to guide future development of the nation at both urban and rural areas. In this regard, the rural land policy of Amhara and Tigray regions in Ethiopia deters the urban dweller's inheritance rights and use of rural land. Amendment of the laws and policies concerning rural land inheritance rights in these regions could be an essential means to strengthen the food security concerns in urban Ethiopia.

Further to this, the informal social support system within the neighbourhood of slum communities in major urban areas plays a significant role in helping households to cope with the food access insecurity. Strengthening such informal institutions and systems with stimulus package as part of UPSNP would address not only the short-run household worries but also facilitates an entry point for sustainable development initiatives in improving the sustainable livelihood, and hence food access insecurity at the grassroots level.

ii) Women empowerment

Households headed by women are at a disadvantage in all the dimensions of vulnerability in comparison to the male-headed households. Empirical evidence in this study has also shown that the level of food insecurity among female-headed households is very high, and they are challenged to cope with food access insecurity. It is, therefore, recommended that government

and other development agencies design their interventions focussing at improving the livelihoods of female-headed households as a critical strategy to address food access insecurity.

iii) Sustaining UPSNP

The UPSNP programme in Ethiopia strives to help poor households address their livelihood vulnerability and to build their capacity to cope with food access insecurity. However, this study found that households with access to UPSNP programme are not yet relieved from the stressful coping situation. Access to the financial loan, however, seems to have meaningfully improved the capacity of the urban poor in coping. Linking UPSNP and job creation and employment generation at a household level is, therefore, an indispensable development strategy to address food insecurity.

iv) Revisiting selection criteria for vulnerable households as beneficiaries of social protection programs and projects

It is recommended that urban households headed by women and those with a higher ratio of young children (below 14 years of age) in their household should be a prime focus in the selection criteria while implementing intervention programs aimed at addressing vulnerability to food insecurity.

v) Factors in food insecurity vary across urban hierarchies

The traditional urban-rural dichotomy may not suffice to portray the full picture of food security situations for policy and programming. The finding of this study has shown that the level of food insecurity as well as the mechanisms food insecure households striving to cope with food access insecurity varies across the continuum of urban hierarchies.

7.3.2 Recommendations for Future Research

The results of the 1994 and 2007 national population and housing census of Ethiopia revealed a decline in nuclear family structure in urban areas of the major regions (Amhara, Oromiya, SNNPR, and Addis Ababa) between the two census periods while urbanisation level during the period has significantly increased. This study similarly showed a higher percentage of extended family structure in major urban sites compared with the household structure in the medium- and small-sized towns. The empirical findings may need to be validated with further research to characterise this factor as it challenges the prediction of the 'dominant sociological theories' based on experiences of the Western world that households would become more nuclear with urbanisation and industrialisation.

Several of the previous studies, in the fields of food security, traditionally used household size as one of the independent variables. However, this study found an enhancement in the prediction power of this variable (household size) by replacing it with the proportion of young children (under 14 years) in a given household, which merits to be recommended for use in similar research in the future.

In this study, the regression model developed for small-sized towns has a better fit than the other models (global, big city, and medium-sized town) in predicting the variability in coping with food access insecurity. Due to the proximity of small-sized towns to rural areas, it is recommended that similar research in the future in rural areas might benefit using the small-sized town model specifications.

The finding of this study has shown that the levels of food insecurity as well as household's mechanisms in coping with food access insecurity vary across the continuum of urban

hierarchies. The finding contributes to the methodology in food security research in the context of the developing nations that stratifying urban areas by their hierarchies in size helps to provide valid input to policy and programme development.

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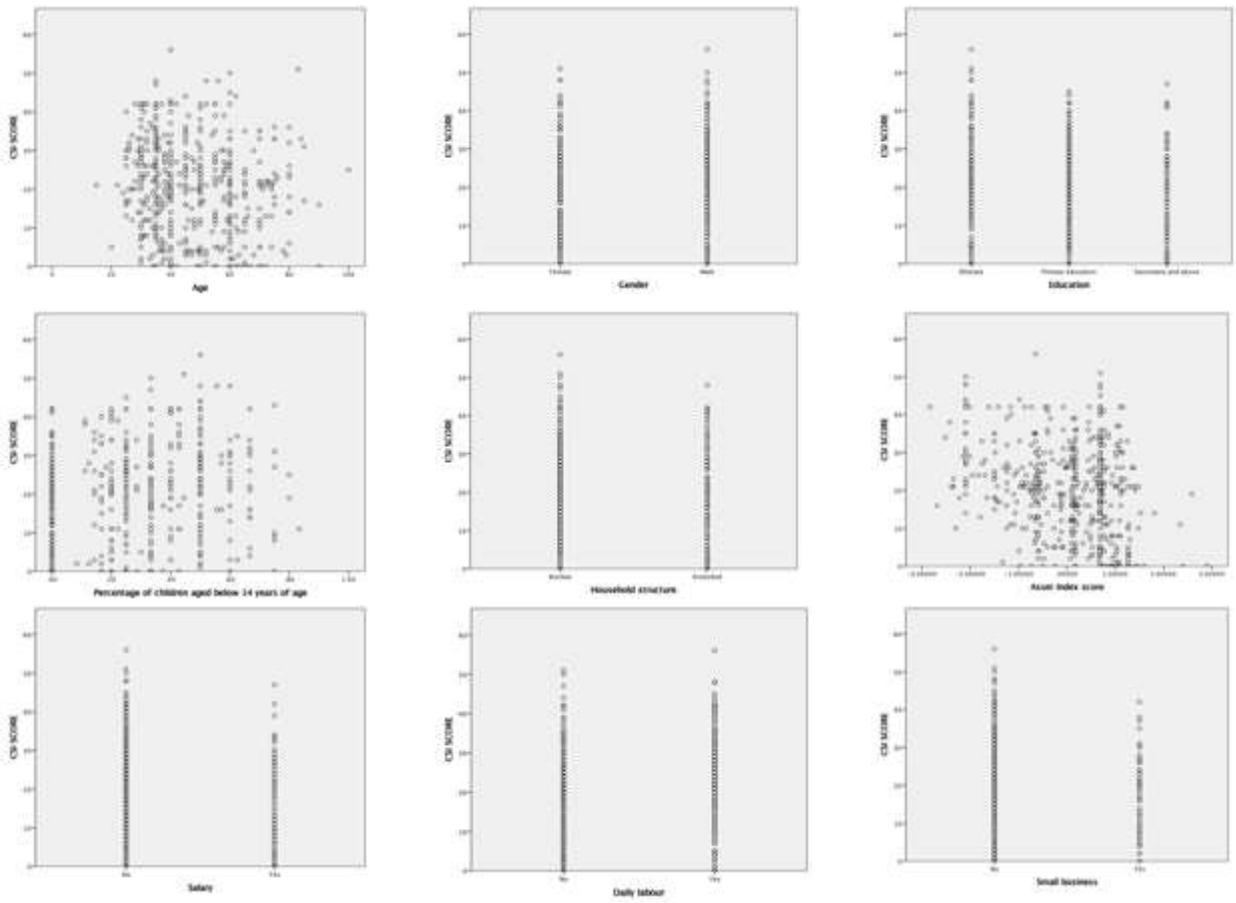
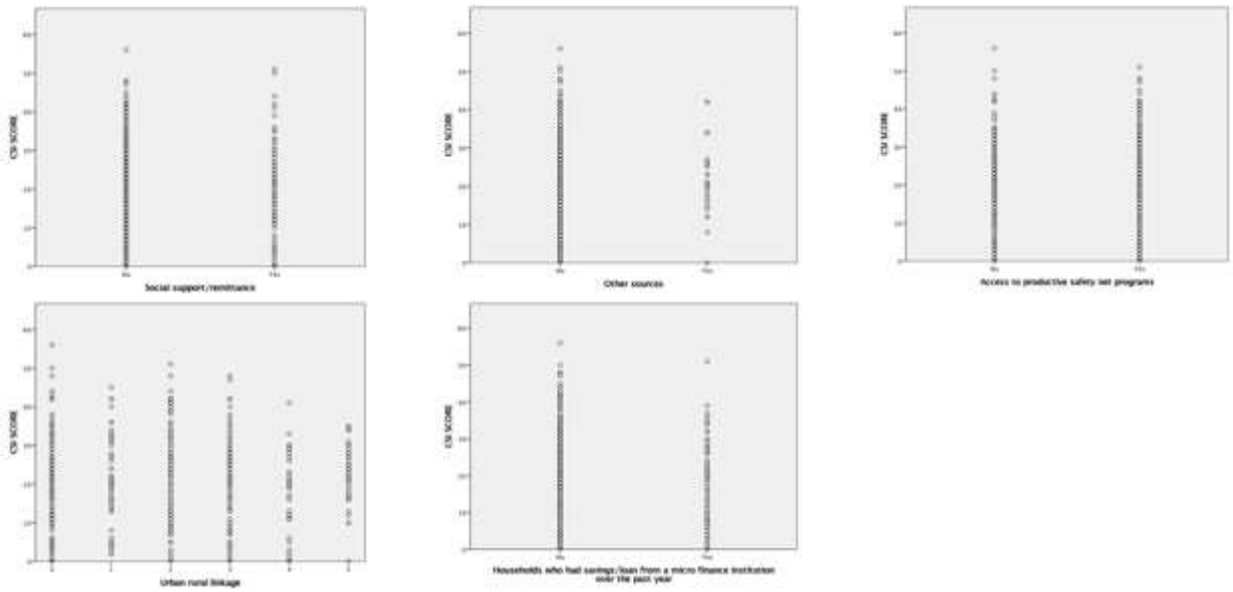
Annex A: Scatterplot of the DV and IVs





Annex B: SPSS IBM Regression Model Outputs

Model 1 – Global Model (total cases)

Descriptive Statistics

	Mean	Std. Deviation	N
CSI SCORE	20.26	12.106	500
Age	47.72	15.045	500
Gender	.50	.501	500
Education	.84	.723	500
Percentage of children aged below 14 years	.2461	.22290	500
Household structure	.30	.458	500
Urban rural linkage	1.93	1.641	500
Asset index score	.0000000	1.00000000	500
Daily labour	.43	.495	500
Small business	.15	.359	500
Remittance	.20	.400	500
Other sources	.06	.230	500
Access to productive safety net programs	.54	.499	500
Access to loan from a micro finance institutions	.15	.361	500

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.473[a]	.223	.203	10.810	1.728

⇒ Predictors: (constant), age, gender, education, percentage of children aged below 14 years, household structure, urban rural linkage, asset index score, daily labour, small business, remittance, other sources, access to productive safety net programs, and access to loan from a micro finance institutions.

⇒ Dependent Variable: CSI SCORE

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16337.911	13	1256.762	10.755	.000[b]
	Residual	56789.241	486	116.850		
	Total	73127.152	499			

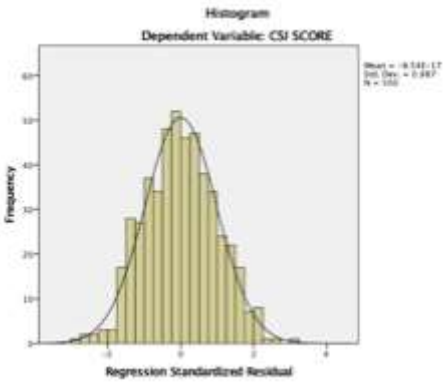
Coefficients

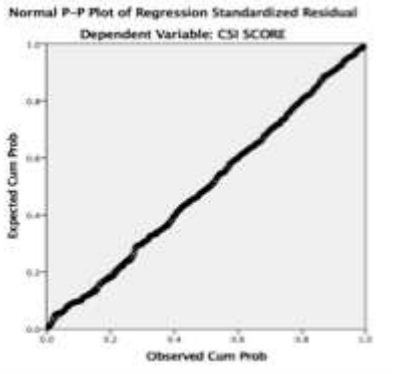
IVs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	14.250	3.075		4.634	.000					
Age	-.035	.041	-.044	-.849	.396	-.124	-.038	-.034	.605	1.653
Gender	3.900	1.098	.161	3.550	.000	.105	.159	.142	.775	1.291
Education	-2.169	.804	-.130	-2.698	.007	-.140	-.121	-.108	.693	1.444
Percentage of children aged below 14 years	8.614	2.422	.159	3.556	.000	.193	.159	.142	.803	1.245
Household structure	-1.130	1.098	-.043	-1.029	.304	-.113	-.047	-.041	.926	1.080
Urban rural linkage	.209	.311	.028	.672	.502	.016	.030	.027	.898	1.114
Asset index score	-3.323	.552	-.274	-6.014	.000	-.281	-.263	-.240	.767	1.304
Daily labour	6.086	1.479	.249	4.116	.000	.266	.184	.165	.437	2.291
Small business	2.309	1.778	.069	1.299	.195	-.084	.059	.052	.573	1.744
Remittance	3.033	1.777	.100	1.707	.088	-.092	.077	.068	.463	2.162
Other sources	6.100	2.392	.116	2.550	.011	.025	.115	.102	.773	1.294
Access to productive safety net programs	3.560	1.087	.147	3.276	.001	.038	.147	.131	.796	1.256
Access to loan from a micro finance institutions	-2.888	1.430	-.086	-2.020	.044	-.116	-.091	-.081	.877	1.140

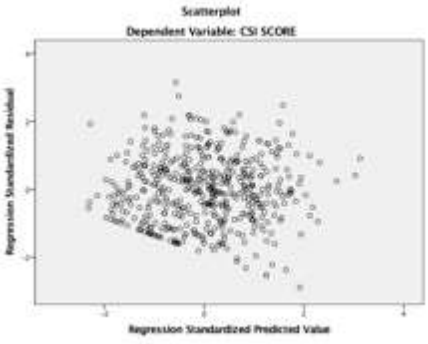
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.01	38.13	20.26	5.722	500
Residual	-31.223	34.003	.000	10.668	500
Std. Predicted Value	-2.316	3.123	.000	1.000	500
Std. Residual	-2.888	3.146	.000	.987	500

Charts







Model 2 – Addis Ababa

Descriptive Statistics

	Mean	Std. Deviation	N
CSI SCORE	12.48	10.489	166
Age	53.11	15.407	166
Gender	.29	.455	166
Education	.81	.793	166
Percentage of children aged below 14 years	.2309	.24713	166
Household structure	.37	.484	166
Urban rural linkage	1.39	1.595	166
Asset index score	.3066359	.72416633	166
Daily labour	.29	.455	166
Small business	.07	.260	166
Remittance	.36	.480	166
Other sources	.04	.202	166
Access to productive safety net programs	.54	.500	166
Access to loan from a micro finance institutions	.12	.327	166

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.408[b]	.166	.095	9.977	1.844

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3022.487	13	232.499	2.336	.007[c]
	Residual	15130.917	152	99.546		
	Total	18153.404	165			

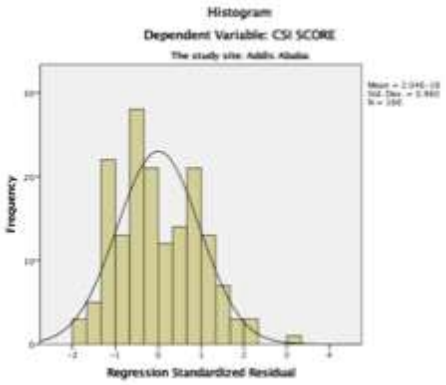
Coefficients

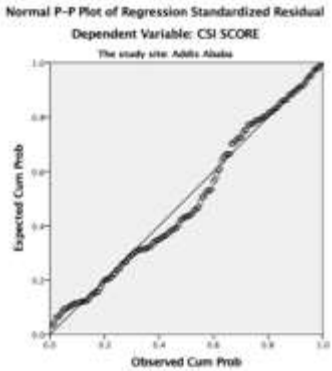
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations				
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	9.351	4.896		1.910	.058					
Age	.058	.069	.086	.849	.397	.092	.069	.063	.538	1.859
Gender	-3.409	1.995	-.148	-1.709	.090	-.179	-.137	-.127	.733	1.364
Education	-1.443	1.232	-.109	-1.171	.243	-.216	-.095	-.087	.631	1.584
Percentage of children aged below 14 years	3.935	3.450	.093	1.140	.256	.068	.092	.084	.830	1.205
Household structure	-3.516	1.721	-.162	-2.042	.043	-.198	-.163	-.151	.871	1.148
Urban rural linkage	.246	.550	.037	.447	.655	.053	.036	.033	.785	1.274
Asset index score	-1.237	1.215	-.085	-1.018	.310	-.125	-.082	-.075	.780	1.282
Daily labour	.103	2.291	.004	.045	.964	.012	.004	.003	.556	1.799
Small business	-2.418	3.461	-.060	-.699	.486	-.099	-.057	-.052	.747	1.340
Remittance	2.046	2.314	.094	.884	.378	.109	.072	.065	.489	2.046
Other sources	9.441	4.175	.181	2.262	.025	.111	.180	.167	.852	1.174
Access to productive safety net programs	3.105	1.688	.148	1.839	.068	.142	.148	.136	.847	1.180
Access to loan from a micro finance institutions	-.545	2.511	-.017	-.217	.829	-.004	-.018	-.016	.898	1.114

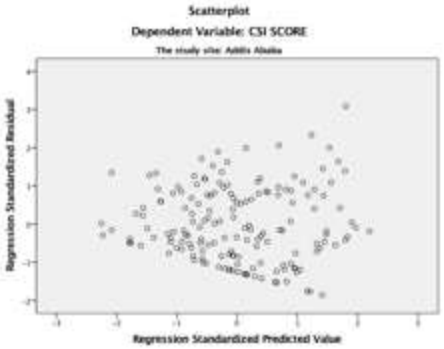
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.84	21.87	12.48	4.280	166
Residual	-18.508	30.814	.000	9.576	166
Std. Predicted Value	-2.253	2.194	.000	1.000	166
Std. Residual	-1.855	3.088	.000	.960	166

Charts







Model 3 – Hawassa

Descriptive Statistics

	Mean	Std. Deviation	N
CSI SCORE	23.35	11.604	168
Age	41.50	13.129	168
Gender	.60	.492	168
Education	1.00	.657	168
Percentage of children aged below 14 years	.2561	.18477	168
Household structure	.38	.487	168
Urban rural linkage	2.05	1.193	168
Asset index score	.3051444	.77083798	168
Daily labour	.54	.500	168
Small business	.20	.398	168
Remittance	.10	.294	168
Other sources	.04	.200	168
Access to productive safety net programs	.99	.109	168
Access to loan from a micro finance institutions	.31	.464	168

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.559[b]	.313	.255	10.018	2.139

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7033.342	13	541.026	5.391	.000[c]
	Residual	15454.634	154	100.355		
	Total	22487.976	167			

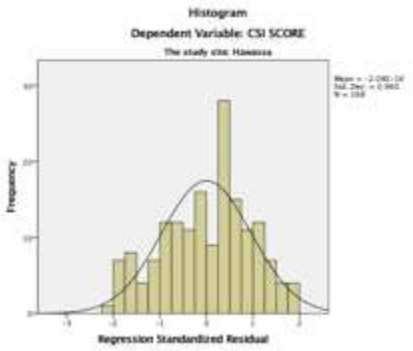
Coefficients

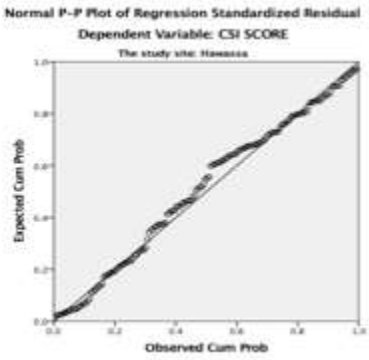
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	8.717	9.451		.922	.358					
Age	.001	.071	.001	.013	.990	-.046	.001	.001	.687	1.456
Gender	1.752	1.870	.074	.937	.350	.009	.075	.063	.709	1.410
Education	-.320	1.368	-.018	-.234	.815	-.104	-.019	-.016	.744	1.343
Percentage of children aged below 14 years	9.901	4.784	.158	2.070	.040	.207	.165	.138	.769	1.300
Household structure	1.071	1.636	.045	.655	.514	.015	.053	.044	.946	1.057
Urban rural linkage	-1.497	.686	-.154	-2.184	.030	-.131	-.173	-.146	.898	1.113
Asset index score	-1.840	1.213	-.122	-1.518	.131	-.117	-.121	-.101	.688	1.454
Daily labour	9.156	2.566	.395	3.567	.000	.455	.276	.238	.365	2.743
Small business	-.583	2.892	-.020	-.202	.840	-.252	-.016	-.013	.452	2.211
Remittance	2.347	3.873	.060	.606	.545	-.080	.049	.040	.462	2.163
Other sources	-1.438	4.444	-.025	-.323	.747	-.101	-.026	-.022	.757	1.320
Access to productive safety net programs	11.159	7.693	.105	1.451	.149	.084	.116	.097	.858	1.165
Access to loan from a micro finance institutions	-4.618	1.761	-.185	-2.622	.010	-.278	-.207	-.175	.901	1.110

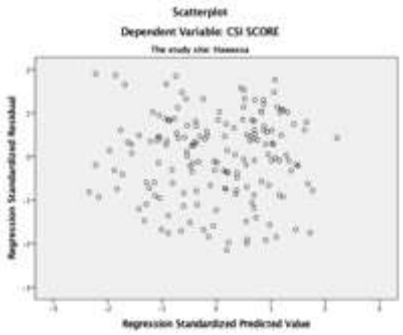
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	8.16	37.73	23.35	6.490	168
Residual	-21.570	19.072	.000	9.620	168
Std. Predicted Value	-2.340	2.217	.000	1.000	168
Std. Residual	-2.153	1.904	.000	.960	168

Charts







Model 4 – Sheki

Descriptive Statistics

	Mean	Std. Deviation	N
CSI SCORE	24.93	10.211	166
Age	48.63	14.255	166
Gender	.61	.488	166
Education	.71	.688	166
Percentage of children aged below 14 years	.2512	.23297	166
Household structure	.14	.353	166
Urban rural linkage	2.34	1.919	166
Asset index score	-.6154567	1.15236623	166
Daily labour	.46	.500	166
Small business	.19	.391	166
Remittance	.15	.359	166
Other sources	.08	.279	166
Access to productive safety net programs	.08	.269	166
Access to loan from a micro finance institutions	.03	.171	166

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.604[b]	.365	.311	8.476	2.052

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6281.550	13	483.196	6.725	.000[c]
	Residual	10920.721	152	71.847		
	Total	17202.271	165			

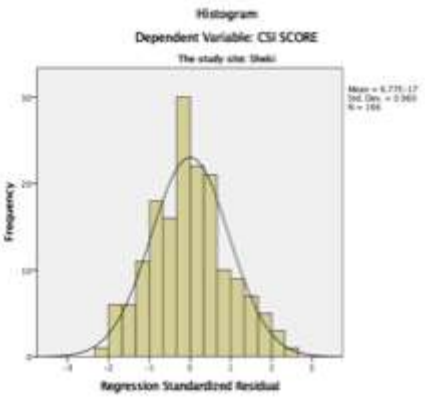
Coefficients

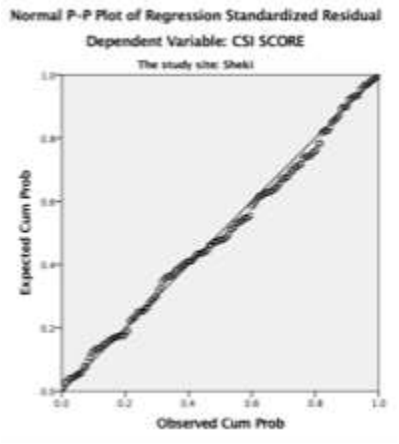
	Unstandardized Coefficients		Standardized Coefficients			Correlations				
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	24.124	4.600		5.244	.000					
Age	-.003	.060	-.004	-.044	.965	-.127	-.004	-.003	.599	1.670
Gender	1.260	1.600	.060	.788	.432	.047	.064	.051	.713	1.402
Education	-2.769	1.180	-.187	-2.347	.020	-.180	-.187	-.152	.661	1.513
Percentage of children aged below 14 years	17.716	3.608	.404	4.910	.000	.327	.370	.317	.616	1.623
Household structure	-1.158	1.949	-.040	-.594	.553	.008	-.048	-.038	.921	1.086
Urban rural linkage	-.898	.398	-.169	-2.255	.026	-.234	-.180	-.146	.746	1.340
Asset index score	-2.399	.724	-.271	-3.311	.001	-.336	-.259	-.214	.625	1.601
Daily labour	-1.966	2.311	-.096	-.851	.396	.105	-.069	-.055	.326	3.063
Small business	-4.566	2.662	-.175	-1.715	.088	-.147	-.138	-.111	.402	2.487
Remittance	-1.831	2.950	-.064	-.621	.536	.042	-.050	-.040	.389	2.572
Other sources	1.280	3.146	.035	.407	.685	.006	.033	.026	.566	1.766
Access to productive safety net programs	7.242	2.520	.191	2.874	.005	.227	.227	.186	.944	1.059
Access to loan from a micro finance institutions	-5.618	3.984	-.094	-1.410	.161	-.099	-.114	-.091	.933	1.072

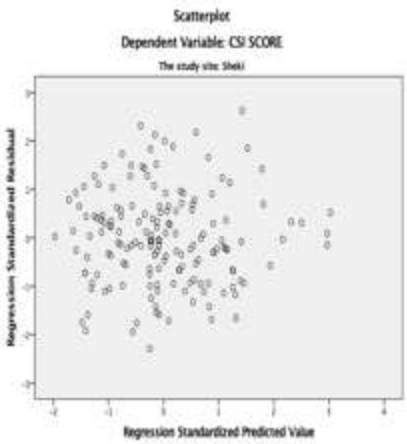
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	12.77	43.59	24.93	6.170	166
Residual	-19.392	22.275	.000	8.135	166
Std. Predicted Value	-1.971	3.024	.000	1.000	166
Std. Residual	-2.288	2.628	.000	.960	166

Charts







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Annex C: Household Survey Questionnaire

I. HOUSEHOLD QUESTIONNAIRE

University of South Africa (UNISA)
Department of Development Studies

March 2019

General instructions:

The purpose of this questionnaire is to collect data for PhD thesis in the University of South Africa (UNISA), Department of Development Studies. The primary aim of the research is to investigate the social, economic, and demographic factors in *coping with food insecurity* among households in urban slum areas of Ethiopia. The research contributes to knowledge, policy, and practice with the understanding of the realities of the food security problems along with an urban hierarchy. This questionnaire has two parts: the first part of the questionnaire will deal with socio-economic and demographic background of the household and its individual members. The second part of the questionnaire comprises questions related to standard food security measurements.

Consent Statement:

Your participation in the research is completely voluntary. You can skip any question that you may be uncomfortable and you can stop and withdraw from the interview at any time. The study will require about 20 minutes of your time. There are no anticipated risks in this study. There are no direct benefits to you for participating in this research. The information that you give in the research will be handled confidentially.

The researcher's name is Tilahun Girma and his contact addresses Mobile phone +251930013075 Addis Ababa, Ethiopia.

Do you agree to participate in the research? If yes, please sign your agreement to participate.

Signature: _____

Questionnaire ID

The study site
1= Addis Ababa
2= Hawassa
3= Sheki

The head of the hou
1= Male
2= Female

Permanent members of the household by age group	Male	Female	Total
0-4			
5-13			
14-17			
18-29			
30-60			
60+			
Total			

PART I: BACKGROUND CHARACTERISTICS

Following here I will be asking you questions in relation to socio-demographic characteristics of the household, economic resource and assets of the household, participation of the household in social protection programs/projects, questions in relation to rural-urban linkage, and access to essential service providing facilities.

1.1 Socio-demographic characteristics of the household

Gender of the head of the household *1= Female* *2= Male*	**Age of the head of the household**	**Religion of the head of the household** *1= Muslim* *2= Orthodox* *3= Protestant* *4= Catholic* *5= Other*	**Marital status of the head of the household** *1= Married monogamous* *2= Married polygamous* *3= Never married* *4= Divorced* *5= Widowed*	**Education level of the head of the household** *Write 0 for Illiterate* *Write the grade level (1, 2,3,4, …, 12) for those who had formal schooling* *TVET collage certificate/diploma ------- 13* *Degree and above -------- 14*	**Place of birth of the head of the household** *1= Same place* *2= Other urban* *3= Rural*
B01	**B02**	**B03**	**B04**	**B05**	**B06**

Socio-demographic characteristics cont…

Employment status of the head 1=Employed to others 2=Self employed 2=Unemployed	**Number of employed household members (aged 14+) engaged in any productive activity during the last 7 days)** *Age 14-17* _____ *Age 18+* _____ *Total* _____	**What is the major source of the livelihood of the household?** *1. Salary* *2. Casual/daily labour* *3. Farming activity* *4. Small business* *5. Renting income* *6. Pension, provident fund, etc.* *7. Remittances* *8. Handicraft* *9. Other ------*	**Household size** *1=Head/spouse* ____ *2=Children* ___ *3=Other relatives* ____ *4=Non relatives* ____ *Total* ____
B07	**B08**	**B09**	**B10**

Socio-demographic characteristics cont…

Employment status of the head 1=Employed to others 2=Self employed 2=Unemployed	**Number of employed household members (aged 14+) engaged in any productive activity during the last 7 days)** *Age 14-17* _____ *Age 18+* _____ *Total* _____	**What is the major source of the livelihood of the household?** *1. Salary* *2. Casual/daily labor* *3. Farming activity* *4. Small business* *5. Renting income* *6. Pension, provident fund, etc.* *7. Remittances* *8. Handicraft* *9. Other ------*	**Household size** *Head/spouse* _____ *Children* _____ *Other relatives* _____ *Non relatives* _____ *Total* _____
B07	**B08**	**B09**	**B10**

1.2 Economic resource and assets of the household

Over the past year was there any member of this household get access to FINANCIAL services (from banks, microfinance, etc)?	Over the past year was there any member of the household have benefited from a Micro & Small-Scale Business Enterprise (MSBE)?	Over the past year was there any member of this household have SAVINGS?	Over the past year was there any member of this household have CREDITS?	Over the past year was there any member of this household participate in "Equib"?	Does this household own any livestock?	Does this household own residential house?
1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No	1. Yes 2. No
E01		**E02**	**E03**	**E04**	**E05**	**E06**

Economic resources and assets cont…

Does this household own non-residential house?	Does this household own farmland?	On what basis did the household occupy this dwelling?	How many living Rooms does the household occupy?	What type of kitchen does the household use?
1. Yes 2. No	1. Yes 2. No	*1. Owned by the household* *2. Rented from government* *3. Rented from private household* *4. Rent free*	*(excluding kitchen, toilet and bath room)* _____	*1. No kitchen* *2. Private kitchen* *3. Shared kitchen*
E07	**E08**	**E09**	**E10**	**E11**

Economic resources cont…

E12 Does your household own the following assets?						
No.	Item	0=No 1=Yes		No.	Item	0=No 1=Yes
1	Sofa set			17	Bed	
2	Chair and table			18	Video recorder	
3	Bicycle			19	Mobile phone	
4	Motor cycle			20	TV set	
5	Cart (Hand pushed)			21	Private car	
6	Cart (animal drawn)			22	Car-Commercial	
7	Sewing machine			23	Water pump	
8	Weaving equipment			24	Jewels (Gold and silver)	
9	Builder's equipment			25	Permanent crops (khat, coffee, etc)	
10	Carpenter's equipment			26	Forestry (Eucalyptus tree, tid, etc)	
11	Welding equipment			27	Cattle	
12	Wood cutting equipment			28	Transport animals	
13	Block production equipment			29	Sheep and goat	
14	Refrigerator			30	Chicken	
15	Gas cooking stove			31	Farm equipment	
16	Electrical iron					

1.3 Participation of the household in social protection programs/projects

Over the past year was there any member of this household who participated in <u>PRODUCTIVE SAFETY NET PROGRAM</u>?	**Over the past year was there any member of this household who participated in <u>SUPPLEMENTARY FEED FOR VULNERABLE CHILDREN</u>?**	**Over the past year was there any member of this household who had access to <u>FOOD EMERGENCY RESOURCES</u>?**	**Over the past year was there any member of this household who participated in <u>EMPLOYMENT PROMOTION PROGRAM</u>?**	**Over the past year was there any member of this household who participated in <u>HOUSEHOLD ASSET BUILDING PROGRAM</u>?**
1= Never 2= Drop out 3= currently practicing 4= Graduated	1= Never 2= Drop out 3= currently practicing 4= Graduated	1= Never 2= Drop out 3= currently practicing 4= Graduated	1= Never 2= Drop out 3= currently practicing 4= Graduated	1= Never 2= Drop out 3= currently practicing 4= Graduated
S01	**S02**	**S03**	**S04**	**S05**

1.4 Questions in relation to rural-urban linkage

Next I will be asking you the social relationships that your household maintained with families and relatives in rural areas

Does this household have families/relatives in rural village?	**Does this household own property in rural village?**	**Is this household engaged in economic activities in rural village?**	**Is this household participating in social activities in the rural areas (such as weddings, funerals, and civic meetings)**	**Does this household exchange money, goods, and visits with the rural families and relatives?**	**Does this household have frequent communication with relatives in rural village?**	**Does this household provide/receive consultation with people living in rural areas?**
1=Not at All 2=Very few 3=Somewhat 4=To a Great Extent	1=Never 2=Rarely 3=Frequently 4=Always	1=Never 2=Rarely 3=Frequently 4=Always	1=Never 2=Rarely 3=Frequently 4=Always	1=Never 2=Rarely 3=Frequently 4=Always	1=Never 2=Rarely 3=Frequently 4=Always	1=Never 2=Rarely 3=Frequently 4=Always
L01	**L02**	**L03**	**L04**	**L05**	**L06**	**L07**

1.5 Access to essential service providing facilities

	Is it accessible in your area? 1= Very inaccessible 2= Inaccessible 3= Somehow accessible 4= Very accessible	**How near is the facility to your neighbourhood?** 1= Very faraway 2= Faraway 3= Somehow nearby 4= Very near	**How expensive is the price?** 1= Very expensive 2= Expensive 3= Reasonable 4= Very reasonable
Food market			
a) **Cerealsand legumes** (Wheat, Teff, maize, rice, beans, etc.)			
b) **Roots and tubers** (Potatoes, cassava, etc.)			
c) **Vegetables and fruits** (Pumpkin, tomato, onion, etc.)			
d) **Meat**			
e) Eggs			
f) Fish and seafood			
g) **Milk and milk products** (e.g. Milk, cheese, yogurt or other milk products)			
h) **Oils and fats** (edible oil and butter)			
i) **Sweets** (e.g. Sugar, honey, etc)			
Milling service			
Public transport			

PART II: QUESTIONS RELATED TO FOOD SECURITY MEASURES

Following here I will be asking you questions in relation to food consumption, household food access, and household coping strategies.

2.1 Questions on Food Consumption (Measures of food consumption score-FCS)

Ask a person responsible for food preparation for the household on the previous day. For each food eaten, ask what the source of each food item eaten that week was.

#	**Food group**	**DAYS eaten in the past week (0-7 days)**	**Source of food** 1=Purchase 2=Own production 3=Traded goods/services, barter 4=Borrowed 4= Received as gift 5= Food aid 6= Other (specify) _____
01	**CEREALS** (e.g. teff, maize, rice, wheat, sorghum, millet or any other grains or foods made from these – injera, bread, etc)		
02	**WHITE ROOTS AND TUBERS** (e.g. potatoes, cassava, or other foods made from roots)		
03	**VITAMIN A RICH VEGETABLES AND TUBERS** (e.g. pumpkin, carrot, squash, and other locally available vitamin A rich vegetables)		
04	**DARK GREEN LEAFY VEGETABLES**		
05	**OTHER VEGETABLES** (e.g. tomato, onion, eggplant)		
06	**VITAMIN A RICH FRUITS** (e.g. ripe mango, ripe papaya, and rich fruits)		
07	**OTHER FRUITS** (e.g. other fruits, including wild fruits and fruit juice made from these)		
08	**ORGAN MEAT** (e.g. liver, kidney, heart or other organ meats)		
09	**MEATS** (e.g. beef, lamb, goat, chicken, pork, etc)		
10	**EGGS**		
11	**FISH AND SEAFOOD**		
12	**LEGUMES, NUTS AND SEEDS** (e.g. dried beans, dried peas, lentils, nuts, seeds or foods made from these)		
13	**MILK AND MILK PRODUCTS** (e.g. milk, cheese, yogurt or other milk products)		
14	**OILS AND FATS** (e.g. oil, fats or butter)		
15	**SWEETS** (e.g. sugar, honey, chocolates, candies, cookies and cakes)		
16	**SPICES and CONDIMENTS** (e.g. black pepper, salt, soy sauce, hot sauce, coffee, tea)		

2.2 Questions on household food access measures (Measures of Household food insecurity access *scale-HFIAS*)

NO	QUESTION	RESPONSE OPTIONS	CODE
1	a. In the past four weeks, did you worry that your household would not have enough food?	0 = No (skip to 2a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
2	a. In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0 = No (skip to 3a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
3	a. In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	0 = No (skip to 4a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
4	a. In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0 = No (skip to 5a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
5	a. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0 = No (skip to 6a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
6	a. In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0 = No (skip to 7a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
7	a. In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0 = No (skip to 8a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
8	a. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0 = No (skip to 9a) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	
9	a. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0 = No (questionnaire is finished) 1= Yes	
	b. How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks)	

2.3 Questions on household coping strategies (*Reduced Coping Strategies Index - rCSI*)

Next I would like to ask you some questions in relation to a crisis/shock that your family encountered during the past year and how this household copes with the difficult situation.

A. Incidence of household income loss and food shortage

	Loss of jobs of household member	**Shortage of food**	**Price rise of food items**
Did this household get severely affected by any of the following major shocks during the past 12 months?	1=Almost always 2=Often 3=Sometimes 4=Seldom 5=Never	1=Almost always 2=Often 3=Sometimes 4=Seldom 5=Never	1=Almost always 2=Often 3=Sometimes 4=Seldom 5=Never
	C01	**C02**	**C03**

B. Coping strategies/mechanisms the household experienced

In the past 7 days, if there have been times when you did not have enough food or money to buy food, how often has your household had to:	**Rely on less preferred and less expensive foods**	**Borrow food, or rely on help from a friend or relative**	**Limit portion size at mealtimes**	**Restrict consumption by adults in order for small children to eat**	**Reduce number of meals eaten in a day**
	C04	**C05**	**C06**	**C07**	**C08**
Number of days					

II. FOCUS GROUP DISCUSSION GUIDE

Introduction I would like to thank you all for coming,

My name is **Tilahun Girma,** a PhD student from UNISA, Department of Development Studies. I am here today to discuss issues related to food security situations and the household level coping mechanisms. Your input will help me to better understand the food security situation of communities in urban areas and the mechanisms that households use to cope with the food shortfall. You are kindly requested to provide answers about the topic based on your current experience and personal opinion of this grant. Do not worry about giving your opinion with full transparency. There are no rights or wrong answers, and you are free to ask for clarification at any time if you do not understand the question.

Our discussion will take about 60 minutes at the most. I want this to be a group discussion, so feel free to participate without waiting to be called on. However, we would appreciate it if only one person speaks at a time. Be assured that all of you will have equal opportunity to express your opinions and please be respectful to opposing attitudes/statements expressed by another participant. There is a lot we want to discuss, so at times I may move the discussion along a bit.

The discussion we will be making, and the information generated as a result, will be kept confidential, and your names will be kept anonymous. You can withdraw from the discussion at any time if you want to.

Discussion agendas:

1. How do you describe the food insecurity situation of your community? Comparing with the past, is the situation better or worse?
2. Which dietary change strategies households mostly use when households do not have access to adequate food or enough money to buy food?
3. Which short-term measures households mostly useto increase household food availability when households do not have access to adequate food or enough money to buy food?
4. Which short-term measures households mostly useto decrease numbers of people to feed when households do not have access to adequate food or enough money to buy food?
5. Which rationing method households mostly use to manage the shortfall when households do not have access to adequate food or enough money to buy food?
6. Which strategies do most households rely on in your community when they do not have access to adequate food or enough money to buy food? Rank the coping strategies based on the frequency of its application at the community level.

Thank you

Annex D: Approval Letter of the Ethical Review and Clearance

UNISA university of south africa

DEPARTMENT OF DEVELOPMENT STUDIES
RESEARCH ETHICS REVIEW COMMITTEE
APPLICATION FOR ETHICS REVIEW AND CLEARANCE

Date: 14/12/2017

Ref #:2017_DEVSTUD_Student_34
Name of applicant: Mr/Ms Tilahun Girma Argaw
Student #: 58554807

Dear Mr/Ms Tilahun Girma Argaw

Decision: Ethical Clearance

Name: MR/Ms Tilahun Girma Argaw

Student in the Department of Development Studies; Supervisor Prof. V Gumede

Proposal: Coping mechanisms of food insecure households in urban Ethiopia

E-mail: 58554807@mylife.unisa.ac.za

Qualification: Doctoral Degree in Development Studies

Thank you for the application for research ethics clearance by the Department of Development Studies' Research Ethics Review Committee for the above mentioned research. Your application was reviewed in compliance with the Unisa Policy on Research Ethics by the Department of Development Studies' Research Ethics Review Committee on: 14/12/2017.

The proposed research may now commence with the proviso that:

1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.
2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Department of Development Studies' Research Ethics Review Committee. An amended application could be requested if there are

University of South Africa
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Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.

3) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

Note:

The reference number 2017_DEVSTUD_Student_ 34 should be clearly indicated on all forms of communication. [E.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Department of Development Studies' Research Ethics Review Committee.

Kind regards,

Dr LJ Ntema
Departmental Chairperson-ERC
Department of Development Studies
Room TvW 4-25
Tel 012 429 2121
E-mail: ntemalj@unisa.ac.za

Annex E: UNISA Support Letters to Local Administrations of the Study Sites

UNISA university of south africa

20 FEBRUARY, 2019

UNISA-ET/KA/ST/29/20-02-2019

OROMIYA REGIONAL GOVERNMENT

DEDO WOREDA ADMINISTRATION

SHEKI

Dear Madam/Sir,

The University of South Africa (UNISA) extends warm greetings. By this letter, we want to certify that Mr. Tilahun Girma Argaw (student number 58554807) is a PhD student in the Department of Development Studies at UNISA. Currently, he is going out for data collection on his doctoral thesis under the title "***Coping mechanisms of food insecure households in urban Ethiopia***".

This is therefore to kindly request your cooperation in providing the student access to data sources. Attached, please find the ethical clearance certificate that he has secured from the Department of Development Studies. We thank you in advance for all the assistance that you will provide to the student.

Sincerely,

Dr. Tsige GebreMeskel Aberra

Deputy Director – Academic and ICT Support

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PO BOX 13836 ADDIS ABABA ETHIOPIA
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+251-114-350078
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UNISA university of south africa

20 FEBRUARY, 2019

UNISA-ET/KA/ST/29/20-02-2019

ADDIS ABABA CITY ADMINISTRATION

YEKA SUB-CITY

ADDIS ABABA

Dear Madam/Sir,

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UNISA

20 FEBRUARY, 2019

UNISA-ET/KA/ST/29/20-02-2019

SNNP REGIONAL GOVERNMENT

HAWASSA CITY ADMINISTRATION

HAWASSA

Dear Madam/Sir,

The University of South Africa (UNISA) extends warm greetings. By this letter, we want to certify that Mr. Tilahun Girma Argaw (student number 58554807) is a PhD student in the Department of Development Studies at UNISA. Currently, he is going out for data collection on his doctoral thesis under the title "***Coping mechanisms of food insecure households in urban Ethiopia***".

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Sincerely,

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